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EDITORIAL COMMENT.

"Newspapers are an essential part of our war organisation."
(Sir Auckland Geddes, Minister of National Service.)

The Standardisation of Engines.

THE American policy of engine standardisation which has resulted in the production of the "Liberty" motor has perhaps not unnaturally turned the thoughts of many in this country to the possibilities held out by the adoption of a similar policy here. They argue, and it must be admitted with considerable force, that the experience gained in the war has resulted in the aero-motor being brought to a high degree of mechanical perfection, and that if the results of that experience can be embodied in a single engine the problems of quantity production and of the supply of spares and replacements would be considerably simplified. Moreover, they argue, there is nothing the matter with a good engine, and provided the resultant of the policy they advocate is a good motor the advantages are obvious and the drawbacks nfinitesimal.

As a war measure, but as a war measure alone, we are not particularly inclined to be too critical of the point of view. Indeed, if such a standardised motor as they appear to have in mind could be shown to be better than anything the enemy possesses, or is likely to develop during the war, the advantages of rapid production and simplicity of maintenance are so obvious that we should agree that the policy is the right one to adopt. In the first place, however, it is not at all clear that such a standardised motor could fulfil these precedent conditions. It might, but we have before us the experience of America in the evolution of the Liberty engine. We believe that the Liberty is really a very good engine now. Very little about it is known officially, it is true, and what is known the Censor will not allow us to say, but we do know something of the difficulties the Americans encountered in its production before it arrived at the stage of being a good practical proposition even for war emergency. There is manifestly no guarantee that a British Liberty, based on the experience of the war and which would of necessity be a combination of a number of the best features of practice taken from existing good motors, would present fewer or smaller difficulties than our friends across the Atlantic had to surmount. Even supposing we agree, for the purpose of argument, that all the initial difficulties could be readily overcome and production be placed on a practical basis at once, we should still view the policy with strong disfavour, except as a war measure pure and simple. It is an axiom that standardisation means at least a measure of stagnation in design, and stagnation is the very last thing we can afford where the development of aircraft is concerned. On the contrary, we want every possible stimulus to progressive achievement. Admitting all the drawbacks of a multiplicity of types for war purposes, we are still far from certain that we are not doing better by the encouragement of invention and initiative than we should do by killing both, as standardisation would almost inevitably result in doing.

It can be argued that safeguards against stagnation can be provided. Design need not be left to a Government department to settle, but the matter can be placed in the hands of a board of design drawn from among the best of our aeronautical and motor engineers who would sit every few months to overhaul design in the light of further experience. That would be all very well as far as it could be expected

to go, but we are afraid it would not go far enough. As matters stand at present, design and progress are not in the hands of, say, half-a-dozen engineers, each one with his own limited ideals—for however eminent the individual may be, he is subject to limitations—but are receiving the constant attention of the whole of the engineering and inventive brains of the industry. It scarcely needs stating under which set of conditions real progress is the more likely to eventuate. We are told that the board would carefully consider every modification that might be suggested, and would as a matter of course embody it if it promised well. Would it? We have to bear in mind that even boards are human, and we must not lose sight of the fact that such a board as we have in mind would in its several individual capacities be engaged on the manufacture of the engine upon whose design they were sitting in judgment. Would there not, then, be an almost certain disposition to avoid changes which would be likely to interfere with manufacture or to lead to expense through the alteration of jigs and patterns? There is not the least reason to link this with any suggestion that there might be bad faith. We do not for a moment harbour any such thought, but we are bound to point out, that even eminent men are subject to the same sub-conscious influences as others less exalted.

In all such matters as this we must take the long view and endeavour to see that, so far as possible, even pressing immediate need does not jeopardise future progress, and it is precisely because we fear that if the advocates of standardisation have their way the virtual elimination of competition is likely to prove a vitally serious drag on the wheels of progress that we look askance at the arguments of the advocates of a standardised aero-motor. All development arises out of competition, and the more we can keep alive the spirit of emulation the faster and farther we shall move along the road to ultimate perfection.

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The War Feats of the Aeroplane.

We have become so used to stories of wonderful feats accomplished by aircraft during the war that everything we hear nowadays leaves us almost cold. The things that, before the war, would have furnished bold headlines in the newspapers and have been a topic of discussion for days in the places where people congregate excite no more than a passing notice. It is scarcely surprising, then, that the story of how touch has been maintained for more than two years between the Allied armies of the Near East and the gallant remnants of the Serbians and Montenegrins who were hidden among their mountain fastnesses and of how they were supplied with arms and cartridges by aeroplane, has hardly attracted attention. There has been nothing but the barest mention of the fact. We are not told how and from where the machines carried out their mission, of how many were engaged in the task of supply, or of what effect their wonderful performances may have had on the situation by keeping up the spirits of the few gallant men who have held out against the enemy for so many weary months. The story is obviously one that would form the basis of one of the most sensational stories of adventure—one that could in fiction never have taken shape in any but the brain of a Jules Verne. Yet we are simply told that the Serbian army, in its victorious advance, has obtained touch with these bands, who "since the Austro-Bulgarian occupation have been holding out among the mountains and have been continuously supplied with arms, food and cartridges by aeroplane."

Now that the episode is historical and the enemy can gain no possible advantage from knowing how it was done, it is a pity that some official commentator with an imagination cannot tell us the full story, which must be a real epic of war.

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The W.R.A.F. Again.

Our article on the shortcomings of the Women's Royal Air Force has brought us a budget of correspondence on the subject of the treatment accorded to candidates for commissions in this organisation—or, if we gave it what would appear to be its proper name, disorganisation. For obvious reasons we shall not give names, nor shall we quote from the correspondence in such a way that the writers can be identified to their detriment. We do assert, however, that there is disclosed a state of affairs which is even worse than we had thought when we penned our first article. We have before us a letter from one candidate—one of the 130 who failed to pass the examination at the end of the comic course at Eltham—which seems to point to something very nearly approaching bad faith. She tells us that having failed to pass, she was told that if she would join the force as an N.C.O. there was no reason why she should not return at the end of the month for another course. After a lapse of six weeks, having heard nothing about the new course, she addressed a letter to the Commandant-in-Chief, requesting that she might be allowed to go up for instruction. This letter had, in the ordinary course of routine, to go through the usual official channels, and was returned next day by the wing adjutant with a note to the effect that she must await a vacancy! She informs us that she gave up a well-paid appointment to become a W.R.A.F. officer, and that this appointment is still open, but she cannot return to it because the W.R.A.F., having got her into its ranks by what approaches, in the circumstances, perilously near to sharp practice, will not release her! There are, be it said, special circumstances in the case which would, we should have thought, impelled those in authority to helpfulness, and, having regard to them, we confess to being utterly at a loss to appreciate the stand taken by officialdom. It leaves us with a very nasty taste.

Apart from anything that has happened with regard to the scandal of the probationers, all is certainly not well with the W.R.A.F. in its internal organisation, nor do the troubles of its members, commissioned or non-commissioned, cease with their appointment. We referred on a previous occasion to the conditions under which its members, many of them ladies who have been brought up in good surroundings and have joined up to add their bit to our war effort, are called upon to work. We do not desire to stress this aspect too much. We quite realise that abuses are bound to crop up in the creation of a new organisation, and that these abuses are certain to attain dimensions which would be intolerable were the circumstances other than they are. Much may be pardoned in the stress of war conditions which would lead to condign condemnation in other circumstances. But there are aspects of the matter which admit of no excuse. We have a letter from a

A British machine on the tail of an Albatros D.5

lady whose record of work in connection with the war cannot be described in any other terms than highly distinguished. We wish we could publish it, but as she expressly desires that we should not put her name on record, we are compelled to respect her confidence. Regarding the course of instruction, she says that it is true the questions were simple, but the time given for answering them was quite inadequate, and it is not surprising that many failed to pass. She herself appears to have been more fortunate and has become an officer. She at once describes the position of commissioned officers of the W.R.A.F. as intolerable. Owing to the weakness and ignorance of headquarters as to where the W.R.A.F. duties and powers begin and end the whole organisation is chaos. In the matter of giving leave to members, for example, officers seem to have no power at all. To give the shortest leave the women officer has to get the pass initialled by the group officer in whose section the member works, and if the desired leave extends to a week it has also to be signed by the officer commanding. As she says, the waste of time and work entailed is appalling. Further than that, it seems to us, as having some knowledge of the Services and their routine, that the system is a direct reflection on the W.R.A.F. officer, who is presumably held to be unfit for the responsibility of granting 24 hours to a member. It is totally wrong that these officers should be commissioned to find themselves divested of every attribute of the officer.

However, this is comparatively a small matter. We come now to other and, as we think, graver aspects of the question. Our correspondent—we are compelled to quote from her letter—says: "The hardest side for an educated gentlewoman is the utter lack of recognition and courtesy she will get from the majority of the N.C.Os. and men and the coarse remarks regarding the women to which she will be subjected. To complain is worse than useless. Headquarters alone can adjust this . . . I have come to the conclusion that past work and sticking to one's job are going to receive no consideration in the W.R.A.F., and I am therefore resigning my appointment. I fear that many like myself will go back to voluntary work unless they are given better treatment and more power and position, and not, as at present, expected to take orders from any junior officer or N.C.O."

We are seriously coming to the opinion that these women's organisations are proving to be one of the capital organising mistakes of the war. It is not altogether easy to see where they come in to our war organisation. How many men have they released for the fighting line? We hear of stations where these women's organisations have supplied personnel supposedly for the release of men for the ranks, but where the men have been kept on in addition to the women. We are given to understand that in the W.R.A.F. no woman driver is allowed to be on duty after 9 p.m., with the consequence that men have to be kept on establishment to carry on the night duty in, for example, the telephone rooms. Then, women drivers are not supposed to make a journey of more than forty miles each way in the day, so that male drivers have to be kept on hand to undertake the longer journeys. That being so, what is the use of the women's organisation, which is apparently supernumerary to establishment? We have heard a great deal of late on the subject of equal pay for equal work, but it certainly seems to us that unless women are really prepared to render equal service to the men in these organisations which are ostensibly intended to release men for the fighting services, we should be better without them. At least we should know where we are, and should not be deluded into thinking that the taxpayer is getting something for his money which is really lacking. We have not the slightest desire to discount the magnificent services rendered by women in the war, but we cannot blind ourselves to what is happening. We agree that the women's organisations as they exist to-day are capable of doing excellent work within their limitations, but the trouble seems very largely to be that the powers that be have not recognised that they have such limitations and have tried to go the whole hog, as it were. As domestic workers, fabric hands, and in a lesser degree as transport drivers women are all very well, but where the thing has suffered is that the authorities do not seem to have sufficiently realised that war is a matter of seven days a week and every day one of twenty-four hours, while women are physically and mentally incapable of the sustained effort required. Too much has been expected of them, and the consequence has been failure of a sort. We do not say that it has been failure absolute and complete, but it has been failure to a degree that must suggest modification of the existing system if these organisations are to continue.

* * *

A Warning to the Hun.

There is nothing the Hun likes so little as to be dosed with his own medicine. We have seen that all through the war. He first used poison gas, and then squealed like a stuck pig when the Allies' countermeasures reversed the balance. He began the dirty game of bombing open towns, and howled about the brutality of warring against civilians when our aerial strength passed his own and permitted us to carry out reprisals. Similarly, it was the enemy who began propaganda from the air, with the object of seducing Allied soldiers from their allegiance. Now that we have followed his example and flooded his back areas with literature from the air, he solemnly points out that the practice is not cricket and that those engaged in the work of proselytising his own troops and civil population place themselves outside the law and will be subjected to the death penalty. The French Government has made the only possible reply to this by informing Austria that for every French aviator so done to death—"murdered" is the word used—it will execute two Austrian airman prisoners.

The same enemy threat applies to British aviators, who are employed on the Italian and Albanian fronts, but so far we have not seen it stated that our own Government intends to exact a similar retribution to that threatened by France. We know that in one or two cases, in which the enemy has condemned British prisoners to death or to long terms of penal servitude, our Government has threatened reprisals, and that the threat has produced the desired effect, but we do not like the idea of each case having to wait to be judged on its merits. We have too vivid a recollection of the fate of Capt. Fryatt to be comfortable about the policy of wait and see where the lives of our gallant airmen are concerned. To our way of thinking, the French method of giving a general warning has much more to commend it, and we should feel much better if the example were followed. So far as we can discern, there is no reason why such an intimation should not be given to the enemy Governments, while there is every argument in its favour.

FLIGHT

REPORT ON THE HALBERSTADT FIGHTER.

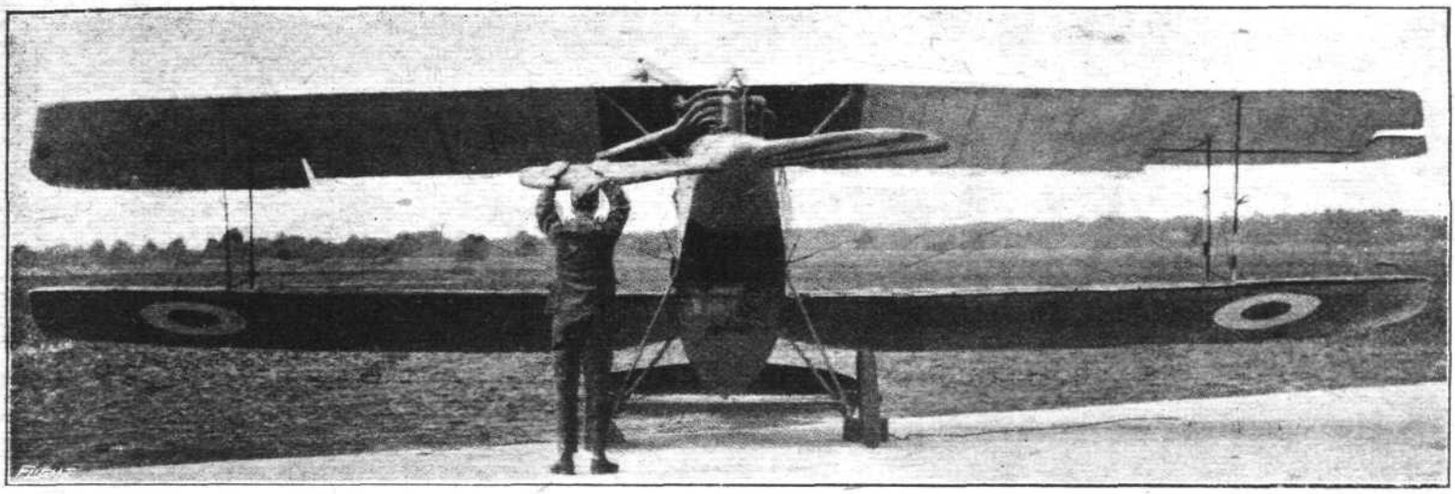
(Issued by the Technical Department (Aircraft Production), Ministry of Munitions.)

[A brief description and a sketch of the fuselage of this machine were published in our issue of August 1st, 1918.—ED.]

THIS machine is a two-seater fighter. It was brought down at Villers Bocage, by Lieuts. Armstrong and Mert on an R.E.8 on June 9th, 1918. The machine is marked "Type H.S. C.L.2," and bears the military number C.L.2, 15,342/17. The date of construction, April 14th, 1918, is stamped on various parts. On the side of the *fuselage* is the following description :—

Leergewicht (weight unladen), 796 k.g.
Hochstbelastung (useful weight), 370 k.g.
Einschl Vollen tank. (Including full tanks.)

There is also a red line about 30 in. long drawn at both sides of the *fuselage*, showing the horizontal in the normal flying position.



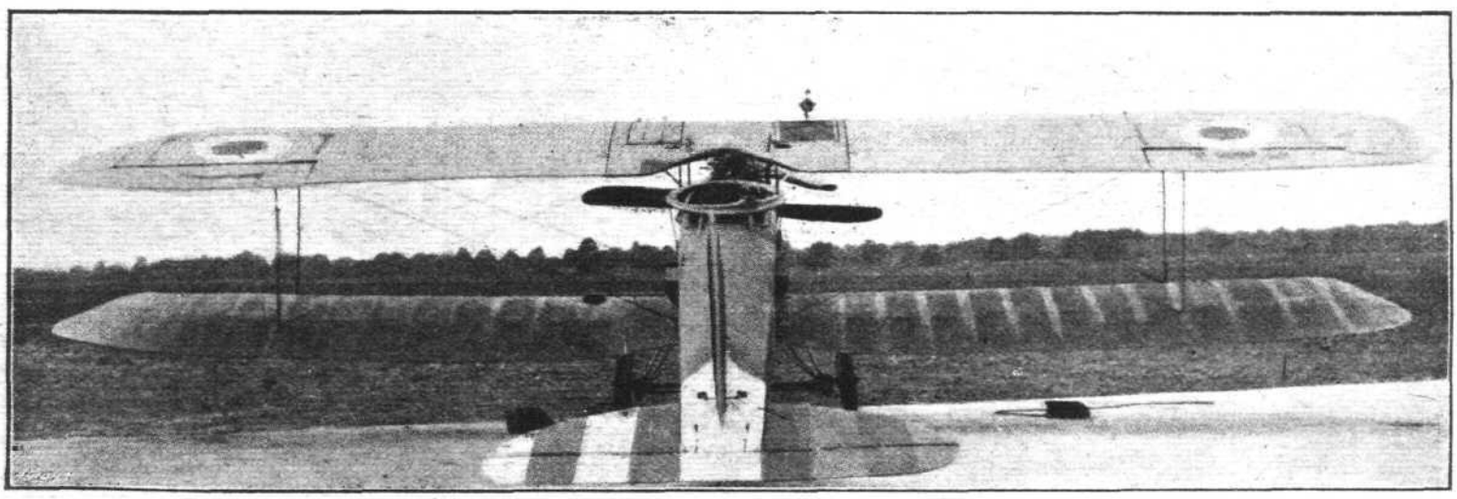
Front view of the Halberstadt fighter.

General Details.

The Halberstadt represents, in all probability, the high-water mark of two-seater German aeroplane construction, as it is not only well and strongly constructed, but its general behaviour in the air is good according to modern fighting standards.

Its general design will be gathered from the drawings on page 1135 and also from the photographs. Constructional details are dealt with by sketches.

Span of upper plane, 35 ft. 3¼ in.; span of lower plane, 34 ft. 11 in.; chord or upper plane, 5 ft. 3¼ in.; chord of lower plane, 4 ft. 3½ in.; gap, maximum, 4 ft.; gap, minimum, 3 ft. 8½ in.; dihedral angle of lower plane, 2 deg.; horizontal dihedral of main planes, 4 deg.; total area of main planes, 310 sq. ft.; area of each *aileron*, 11.6 sq. ft.; area of *aileron* balance, 2 sq. ft.; load per square foot, 8.2 lbs.; area of tail planes, 13.6 sq. ft.; area of elevator, 12.4 sq. ft.; area of fin, 6.4 sq. ft.; area of rudder, 7.9 sq. ft.; area of rudder balance, 1 sq. ft.; maximum cross-section of body, 8.8 sq. ft.; horizontal area of body, 44 sq. ft.; vertical area of body, 52.8 sq. ft.; length over all, 24 ft.; engine, 180 h.p. Mercedes; weight per h.p. (180), 14.07 lbs.; capacity of petrol tanks, 34 galls.; capacity of oil tanks, 4 galls.; crew, 2; guns, 1 fixed and 1 movable; military load on test, 545 lbs.; total load on test, 2,532 lbs.



Rear view of the Halberstadt fighter.

Performance.

Speed at 10,000 ft., 97 m.p.h., 1,385 r.p.m.

	Mins.	secs.	Rate of climb in Ft./min.	Indicated Air speed
Climb to 5,000 ft. ..	9	25	440	69
Climb to 10,000 ft. ..	24	30	240	64
Climb to 14,000 ft. ..	51	55	80	58

Service ceiling (height at which climb is 100 ft. per minute), 13,500 ft.; estimated absolute ceiling, 16,000 ft.; greatest height reached, 14,800 ft. in 64 min. 40 sec.; rate of climb at this height, 50 ft. per minute.

Stability and Controllability.

This machine cannot be considered stable. There is a tendency to stall with the engine on, and to dive with the engine off, Directionally, owing to the propeller swirl, the machine swings to the left, but with the engine off is neutral.

Pilots report the machine light and comfortable to fly. The manœuvrability is good, and this feature, taken in conjunction with the exceptionally fine view of the pilot and observer and the field of fire of the latter, makes the machine one to be reckoned with as a "two-seater fighter," although the climb and speed performances are poor judged by contemporary British standards.

Principal Points of the Design.

Single bay arrangements of wings.

Conspicuous set back of the main planes.

Empennage free from wires.

Fuselage tapers to a horizontal line at the rear in direct contradistinction to the usual German practice.

Pilot's and observer's cockpit constructed as one.

Construction.

Wings.

The upper wings are supported by a large centre section, having a span of 6 ft. 3 in. This centre section is at right angles to the centre line of machine, but at each side of it; the wings are thrown back with a horizontal dihedral of 4 deg. The lower wings are smaller in chord and very slightly smaller in span than the upper, and are fixed direct to the lower surface of the *fuselage*, and it is to be noted that where the trailing edge joins on to the *fuselage* it is shaped so as to avoid a surface of discontinuity at the root of the wing. This is done by smoothly turning upwards the trailing edge.

The actual construction of the wings is of considerable interest, especially on account of the novel type of spar which is employed. This applies to both the upper and the lower planes. The front spar measures 2¾ in. by 1 in. and at the butt is placed about 4 in. from the leading edge. It is of "I" section, but is left full at such points as those at which internal bracing wires are fixed. A section of this spar, given in Fig. 1, shows how it is connected to the leading edge by means of ply-wood, both top and bottom.

It will be seen that on the upper surface the ply-wood is extended rearwards for a distance of some 4¾ in. from the centre of the spar, and terminates in a small transverse flange about ½ in. deep. This construction furnishes a leading edge of great rigidity and strength, and at the same time it would also appear to be light in weight.

A section of the rear main spar is given in Fig. 2. In this case the main member is of "O" or box section, and is built up of two pieces let into one another in a rather unusual manner. This is clearly shown in the drawing. Both at the top and bottom of the spar, thin strips of wood are used to cover the glued joint, and on this is tacked, both above and below, a flat length of ply-wood 7 in. wide which overhangs the main member of the spar an equal distance at each side.

This ply-wood web is flanged at each end with strips of wood glued in position, and on these strips are fitted small corner pieces which serve to support the ribs. The latter are also of ply-wood, to which are glued and tacked rails of solid wood, top and bottom.

A notable point of the wing construction is the fact that steel tubes are not used as the compression members of the internal bracing, as is the common practice. These members are made of box form ribs which occur at intervals along the spars. Adjacent to the root of the wing a very large reinforced box rib occurs, of which the section is given in Fig. 3.

The absence of steel tubes considerably simplifies the attachment of the bracing lugs to the spars, a specimen of which is shown in Fig. 4. It will be noticed that it is of a very simple form, and in this respect it is characteristic of the design of the aeroplane on the whole, which, from this point of view, is far less elaborate than the majority of German designs and appears to be in many ways more practical, especially having regard to quantity production.

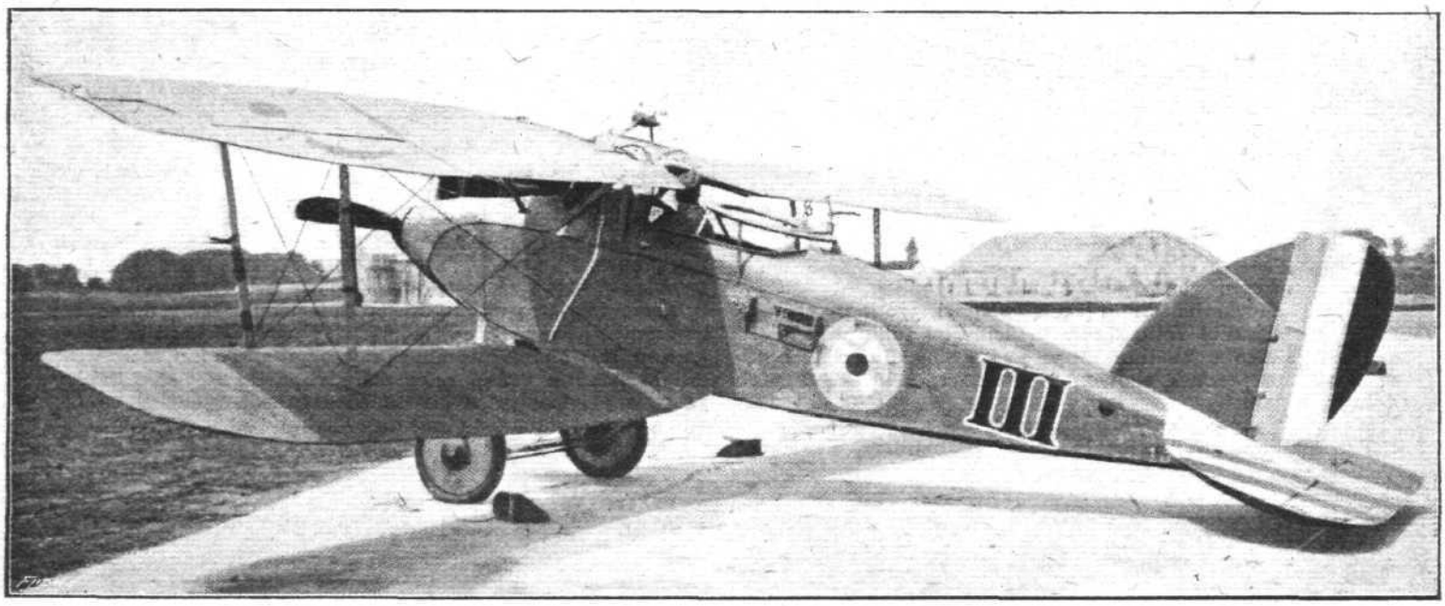
Wing Attachments.

The whole of the centre section, both upper and lower surface, is covered with three-ply wood, and the spars used in it are of similar design to those fitted to the wings, and already described. Both the upper and lower wings are provided with attachments which allow of their being very readily taken down. Views of these fittings are given in Figs. 5 and 6, the former showing the attachment of the upper wing to the centre section, and the latter that of the lower wing to the *fuselage*. In the former case, the fitting is covered in with a spring operated trap door which also gives access to the joint of the *aileron* control shaft. A sliding door is used in the lower plane, and it will be noticed that the spar is at this point protected by an aluminium foot plate. In each case, quick detachable safety bolts are employed. In Fig. 7 are given further details of the type of spar socket in use. This is built up of sheet steel and oxy-acetylene welded, the quality of this work appearing to be very high.

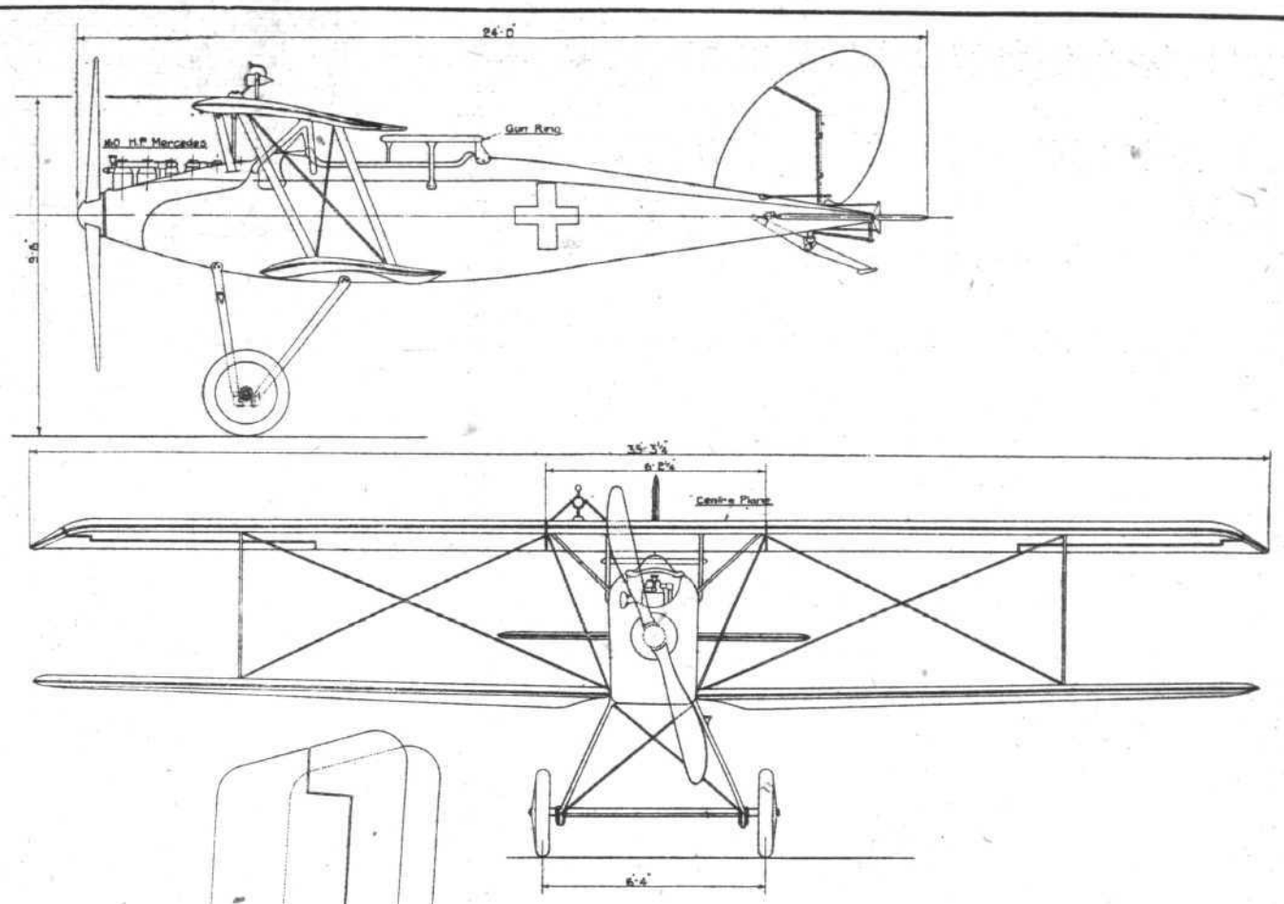
The spars of the lower wings engage with a fork-ended tube passing right across the floor of the *fuselage*, and supported by the *longerons* of the *nacelle* by means of the sockets as shown in detail in Fig. 8. Here, again, a high quality of workmanship is evident, and it may be said without exaggeration that in this respect the Halberstadt machine is decidedly superior to the other German aeroplanes which have been reported upon, with, perhaps, the single exception of the Fokker.

Struts.

The struts throughout this aeroplane are of streamline steel tube of light section, but in contradistinction to the



Three-quarter rear view of the Halberstadt fighter.



HALBERSTADT

SCALE ½" = 1 FOOT

GENERAL DETAILS.

TWO SEATER BIPLANE.

SPAN - 35'-3¼"	HEIGHT - 9'-6"
GAP 4'-0" TO 3'-8½".	ENGINE - 160 H.P.
CHORD TOP PLANE 5'-3¼".	SET BACK OF PLANES - 4"
CHORD BOTTOM PLANE - 4'-3½".	PROPELLER - 9'-0"
OVERALL LENGTH - 24'-0".	TRACK - 6'-4".
TAIL PLANE SPAN - 8'-11".	STAGGER - 2'-0"

General arrangement of the Halberstadt fighter.

usual German practice they are not tapered at the ends, but end abruptly, as shown in Fig. 9. This form of construction has the advantage of lending itself very well to the saving of labour, as the aeroplane struts are simply lengths of plain tubing pierced with transverse holes and reinforced by welded shoulders where the latter occur. The struts are secured top and bottom by bolts and eyes, and it will be noticed that where a cross bracing wire has to be taken from this junction, the turnbuckle is neatly anchored to a small pin passing through the rear of the tubular strut, which is slotted and slightly expanded at this point.

The bolt hole is also reinforced by spot welding. This arrangement of strut attachment appears to be very practicable and certainly looks extremely neat.

The upper ends of the inclined centre section struts are fitted with a different type of anchorage, as in this position the simple form of attachment used on the interplane struts cannot be adopted. A sketch is given in Fig. 10, from which it will be seen that the end of the strut is welded up solid and fitted with a scooped-out slot for the reception of the diagonal wire which runs to the bottom of the *fuselage*. This wire is very neatly secured by the same bolt as fixes the centre section strut.

The rear spar of the centre section is supported by two vertical struts of the "V" type having their base points attached to the upper members of the *fuselage* and the apex fixed to the centre section spar. The manner in which the lower joints are fitted to the *fuselage* brackets and the form of the latter are made clear in Fig. 11.

The bracing wires run as follows:—In the rear between the extremities of the struts; the lift wire in front joins the top of the forward strut to the landing carriage strut. There are no drift wires outside the wings.

Fuselage Construction.

One of the most notable points in the Halberstadt *fuselage* is that whilst it retains the characteristic German form, both forward and amidships, it shows great individuality at the tail, at which point it tapers to a horizontal line, instead of to a vertical line, as is the practice in nearly all other German aeroplanes. The advantage of this arrangement is that the fitting of the tail can be made of sufficient strength without introducing any need for wire bracing. Thus, apart from head resistance, it has less masking effect on the movable gun.

The *fuselage* is constructed in the accepted manner of four main *longerons* fitted with skeleton bulk heads at intervals and covered in with three-ply wood. The bulk heads are made as shown in Fig. 12, and are of a very light construction, except that adjacent to the tail, which serves as the main support of the rudder post and tail plane spar. At this point the bulk head is made of multi-ply wood, and is extensively fretted, as shown in the sketch, Fig. 13. Slots are cut for the reception of the *longerons*. The rudder post is fixed to the bulkhead by sheet steel brackets.

The sketch, Fig. 14, shows in more detail the fitting of the *longerons* to this bulk head, and it will be noticed that wedge-shaped filling pieces are used, and also that the *longeron* itself is wrapped with fabric throughout its length. Immediately in front of this tail bulk head, and at each side of the *fuselage*, a small vertical wooden member is dropped from the upper *longeron*. This, together with the bulkhead, serves to support the bracket which carries the leading edge of the fixed tail planes. This will be referred to later.

Another notable feature of the *fuselage* is the fact that the pilot's and gunner's cockpits are made in one without apparently introducing any weakness into the construction. This scheme has the advantage of permitting the pilot and passenger to sit very close together, so that the length of the *fuselage* is reduced. The two cockpits, whilst to all intents and purposes in one, are actually separated by a cross-piece, which is used as a tray for the convenience of the observer. It is, however, probable that the primary object of this cross-piece is to perform a constructional function.

The gun ring does not, as in the usual design, form an integral part of the *fuselage* coaming, but is fitted thereto by brackets.

Inside the observer's cockpit, the *fuselage* is reinforced, between the floor and the sides, by slightly curved panels, as shown in the sectional sketch, Fig. 15. In the space formed by these panels run the control wires, which are thus out of the way and cannot accidentally be interfered with by the observer.

Empennage.

As is shown in the general arrangement drawings, the *empennage* consists of curvilinear fin with balanced rudder, and a semicircular tail plane to which is hinged a single elevator. As has already been noticed in the description of the *fuselage* construction, the mounting of these tail planes is carried out without the use of any external wiring or cross-bracing. The fixed tail planes are built up of steel tubes, and have a section curved both top and bottom. The rear spar, which acts as part of the hinge of the elevator, is carried in a pair of built-up welded steel brackets, which form the end piece of the *fuselage*, as shown in Fig. 16. The front spar, which is slightly in the rear of the leading edge, is capable of being adjusted when the machine is on the ground, so as to vary the angle of incidence of the tail planes. The adjustable clip for this purpose is shown in Fig. 17, and gives a choice of four positions. The built-up steel brackets, which form this attachment, are carried, one on the rearmost bulkhead, shown in Fig. 13, and the other on the small vertical strut, noted in Fig. 14.

The method of construction of the fin and rudder is shown in Figs. 18 and 19. The same principle is adopted for the tail planes and elevator. It will be seen that it is a combination of wood and steel construction. The ribs of the fin, which is curved in section, and has a rounded leading edge, consist of thin steel tubes, 8 mms. in diameter, welded to the leading spar, and taken back to the rudder post at a slight angle to each other. This staggering of the tubes gives the rib the thickness of a single tube only at the trailing edge. They are reinforced with diagonal tubes of 5 mms. in diameter. The leading edge is formed by a covering of thin three-ply wood supported by a light wooden framework, the form of which is indicated in Fig. 19.

Ailerons.

The *ailerons* are of the balanced type, and are fitted on the upper plane only. They are furnished with the usual welded steel framework, and are very light in weight. Their method of operation differs from that found on any other German design. The *aileron* front spar, which is hinged to the rear spar of the wings, is continued inwards by means of a tubular steel extension until it reaches a point level with the side of the *fuselage*. Here the extension of the shaft terminates in a crank, which is operated direct by the "T" shaped control lever through the medium of vertical steel rods.

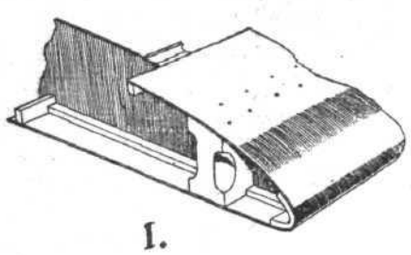
The arrangement of these *ailerons* and their levers may be gathered from the photographs, Nos. A and B. Fig. 5 shows how the *aileron* operating shafts are split and provided with bolted flanges whereby that end of the shaft which is carried in the centre section of the upper plane may be easily detached from the portion which is housed in the wing. Figs. 20 and 21 illustrate details of the attachments of the *aileron* shaft to the *aileron* itself. The bearings of the shaft consist of a flanged plate at each end, as shown in the drawing, Fig. 20. On the inner side is a coupling which unites the front spar of the *aileron* to the operating shaft. Each of these members terminates in a semicircular driving dog, and the two are united by a clamped sleeve which is also fitted with a locating cotter pin. This allows the *aileron*, as a whole, to be removed very readily in case of need. The tips of the *ailerons* are turned up at their extremities so as to present, when the controls of the machine are in their normal position, a slightly negative angle to the relative wind. This is in conformity with the usual German practice.

Control.

A sketch of the control gear is given in Fig. 22. It is, in general, of the usual type, and the lever is fitted with a locking device, whereby the incidence of the elevator can be fixed when desired. This consists of a light telescopic tube arranged diagonally and fitted with a clamp, operated by a thumb screw. The control lever is fitted with an "L" shaped extension at its base, which is pivoted to a long crank bar. This is fitted with bell cranks at each end, and is carried in bearings mounted in the sides of the *fuselage* in such a manner that the bottom end of the lever is coincident with the centre line of the pivot bearings. As shown in the sketch, the control lever has a "T" piece attached to its foot, which is coupled up through universal links to rods, which extend vertically to the *aileron* cranks. The *ailerons* are thus worked entirely positively, and without any cables and pulleys.

Mounted at the head of the control levers are two triggers for operating the fixed machine guns for which accommodation is provided, though only one was actually found on the aeroplane.

The rudder is controlled by a built-up foot bar with the usual heel rests. This is carried in a pivot mounted on a light steel tube fixed across the *fuselage longerons*. Below this tube the rudder bar pivot carries a grooved pulley of large diameter, over which the rudder wire is passed. It is then taken over pulleys at each side, and down the *fuselage* to the cranks at the rudder post.



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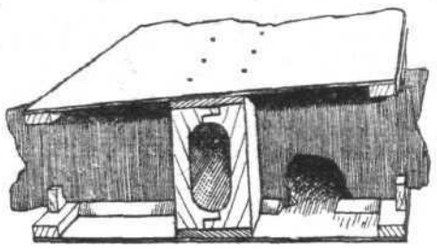

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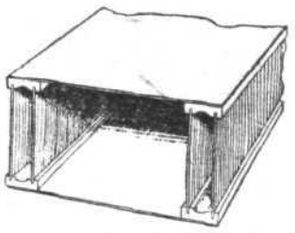

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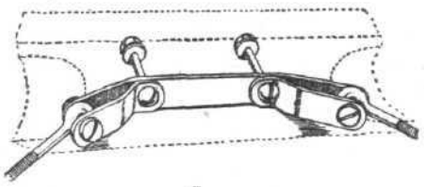

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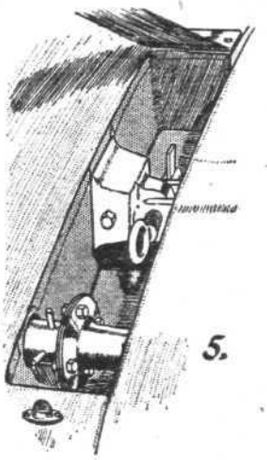

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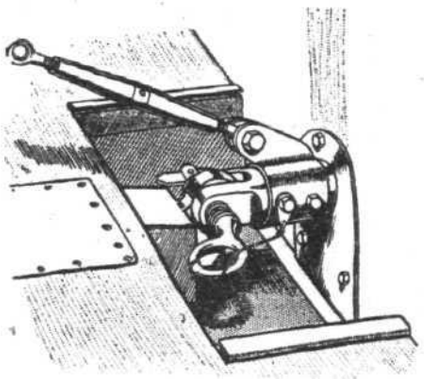

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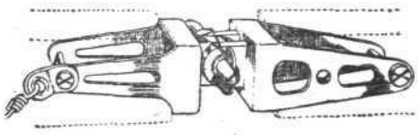

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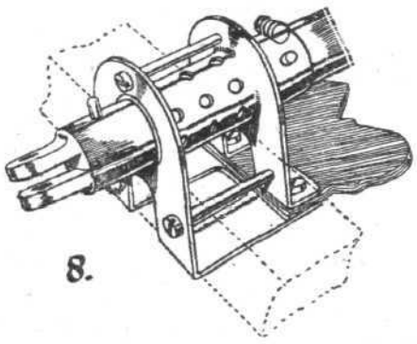

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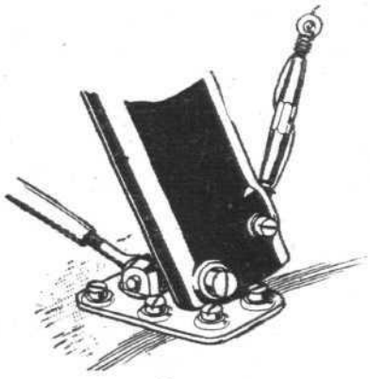

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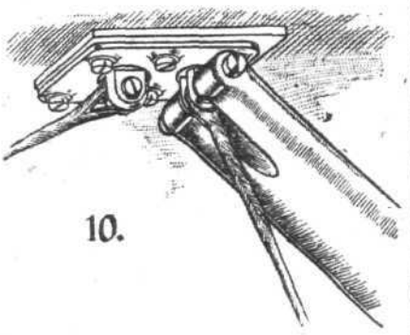

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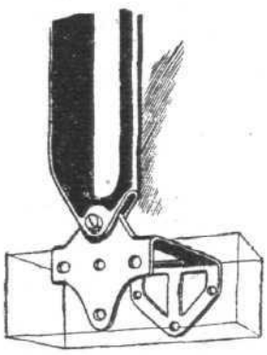

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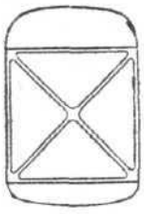

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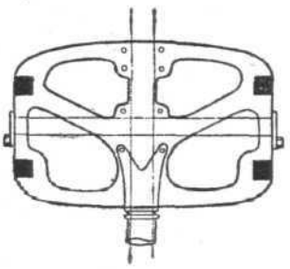

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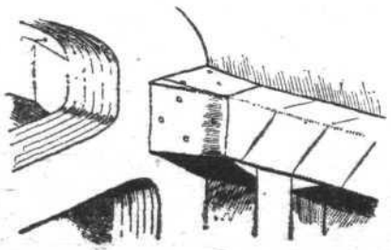

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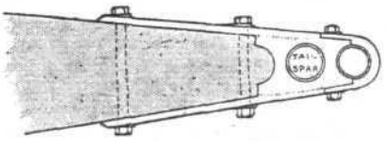

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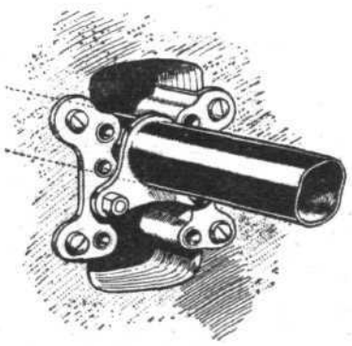


17.

Some constructional details of the Halberstadt fighter. (Figs. 1 to 17.)

It is worthy of note that whilst none of these controls are duplicated, the elevator cranks are fitted with two sets of bolt holes, so that the leverage can be adjusted if necessary.

Undercarriage.

The undercarriage consists of a steel axle, fitted with 760 by 100 wheels. The axle is supported from a pair of tubular steel struts at either side by means of triple steel coil spring shock absorbers. The upper attachment of the undercarriage struts is shown in Fig. 23, which illustrates the form of bracket carried on the outside of the *fuselage*, and bolted to one of the forward bulkheads. The struts are reinforced for the reception of the bolts in a manner similar to that described for the interplane struts.

At their bottom end, the struts are welded together into the form shown in Fig. 24, and they are also reinforced by a fixed axle or tie-rod, the sockets of which are slotted for the reception of the turn-buckles of the cross-bracing wires.

The undercarriage design is considerably neater than that found on the general run of German aeroplanes, and appears to be both strong and light.

Tail Skid.

A view of the tail skid is given in Fig. 25, and it will be seen that this possesses one or two features of interest.

The skid itself is of ash, reinforced with a light built-up sheet steel shoe. The forward end projects through a hole in the *fuselage*, and is fitted with the usual shock-absorber device, which is fastened to the rearmost bulkhead.

The tail skid is pivoted to an extension of the rudder post, and though it is capable of swinging slightly from side to side, is not actually steerable. Immediately above the shoe of the tail skid, is a second steel shoe, shaped like a spoon, which is rigidly supported by a pyramid of steel tubes. The object of this is to prevent any possibility of the elevator cranks coming into contact with the ground, even should the tail strike the earth sufficiently hard to carry the tail skid shock absorber to its limit of extension.

Engine.

The engine is a high-compression 160 h.p. Mercedes (commonly known as 180 h.p.), and is of standard type. This engine has been fully described in Handbook No. 805.

Engine Mounting.

The engine bearers are of wood, and are directly supported by bulkheads in the forward part of the *fuselage*.

Petrol Tanks.

There are two tanks for petrol. The main supply is carried under the pilot's seat, and has a capacity of 24 galls. This is fed to the carburettors under air pressure, and the usual hand and engine pumps are employed.

The second tank is let into the upper surface of the centre section of the top plane, and is clearly shown in Photo. B. This contains 8 galls., and is fitted with a glass tube, lying parallel to the upper curvature of the plane, by which the pilot can readily see the level of the fuel. This gravity tank can be filled from the main tank by means of a semi-rotary hand pump.

Radiator.

The radiator is of the type which is becoming more and more adopted by German designers, namely, that which is embodied in the upper plane surface. In this case the radiator forms part of the right-hand side of the centre section. It is fitted with a small subsidiary water tank, details of which are shown in Fig. 27, which is provided with a trumpet nozzle pointing forward. Details of the radiator shutter are given in the photograph No. A. Provision is made for the fitting of a water-circulation thermometer, but this instrument was not actually found on the machine. The radiator shutter consists of a sliding panel of sheet steel mounted on a light tubular framework forming rails. This is within easy reach of the pilot, and can easily be slid forward or backward when it retains its position by reason of the lift effect upon it, and the friction between the guides and the rails.

As shown in sketch, Fig. 26, the inlet and outlet pipes of the radiator are both fitted at its left-hand front corner, the radiator being furnished with internal baffles, which promote complete circulation of water through all the tubes. In order to prevent the possibility of an air-lock forming, a small tube is led from the outlet pipe through the bottom of the radiator tank, and is brought close to the bottom side of its top surface. If air should accumulate in the forward and upper part of the radiator, this tube would quickly allow the lock to be dissipated.

The sketch, Fig. 26, shows the adapter for the radiator thermometer in the outlet pipe. From the inlet pipe, a small branch is taken off for the carburettor jacket, and from the rear end of the radiator, a pipe provided with a cock, by which the tank can be emptied, is led to the trailing edge of the upper plane.

Oil.

A supply of 5 galls. of oil is carried in a small tank fitted at the side of the engine. The latter is furnished with a pump, which, while circulating the lubricating oil contained in the tank, draws a small supply of fresh oil from the tank at every stroke.

Propeller.

The screw is of the usual built-up type, and consists of eight laminations of woods in the following order :—

Ash, ash, mahogany, ash, mahogany, ash, mahogany, ash.

It has a diameter of 2.4 metres and a pitch of 2 metres, and was built at the Luckenwalde Propellerwerke, Niendorf. In front of the propeller boss proper is a built-up laminated plate to which a spinner is fixed by means of a girdle of stranded steel cable.

Wireless.

The aeroplane is internally wired to give greater capacity for wireless, and accommodation is provided for the aerial and its spool in the observer's cockpit. The wireless dynamo, which also provides current for electrically heating clothing, is driven direct from a pulley on the engine, and is mounted on a bracket carried by the left-hand engine bearers.

The form of this bracket is shown in Fig. 28, which also indicates the manner in which it is adjustable. The bracket consists of a flanged and welded sheet steel construction comprising two plates. The upper extremities of these plates are joined by a transverse bolt on which is hinged a pad against which the foot of the dynamo base is bolted. A similar bolt and pad is furnished at the bottom of the plates, but in this case the bolt is adapted to slide in a guide so that the tension of the belt can be adjusted and the bolt and its pad locked in any position by a thumb screw.

The dynamo, when fitted, lies outside the wall of the *fuselage* at a point level with the rear of the engine, and is then covered in with a bulbous streamline fairing. When the dynamo is not (the whole of the wireless apparatus being installed only when actually required) fitted, this streamline fairing, which is readily detachable, has its place taken by a flat panel which can be discerned at the left-hand side of the *fuselage* in photograph No. B.

Engine Control.

A throttle lever of the usual ratchet type is fitted at the left-hand side of the pilot's cockpit, the carburettor being fitted with an automatic altitude connection. On the dashboard is a screw-down grease pump, for lubricating the water-pump spindle.

Ignition is controlled by a self-locking lever. The dashboard is completed with the usual instruments—starting magneto, main switch, petrol pressure gauges, oil-pressure gauges, air pump, and petrol lever indicator. On the right-hand side of the pilot's seat is a lever controlling the clutch of the wireless dynamo drive.

Level Indicator.

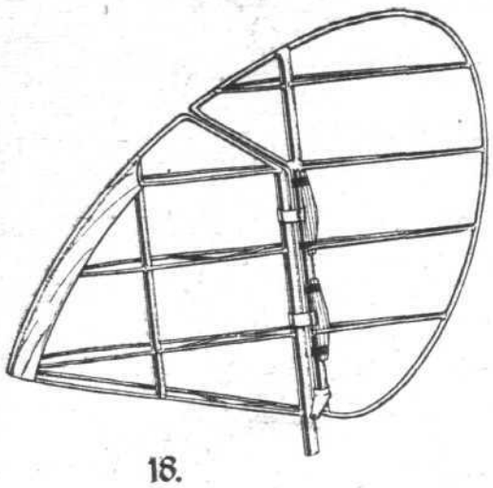
A level indicator of the type shown in Fig. 29 is fitted on the dash board. It is of a type not previously found on German aeroplanes. It consists of a pendulum device, operating a circular disc, the lower half of which is covered by a semicircular metal shield. The upper half of the disc is dark in colour, though not quite so dark as the shield, and below its horizontal diameter the swinging disc is painted white, so that if the machine side-slips a white sector becomes visible aginst a dark background, as indicated in the sketch. This instrument appears to be very much better made than the usual indicators fitted to German machines.

Gun Mounting.

A notable feature of the Halberstadt machine is the fitting of the gun ring, which is not incorporated in the *fuselage*, but is attached to its top surface by streamline steel struts. In front, it is supported by two converging steel tubes in a form of a " V " which branch from the upper *fuselage longerons*. The gun ring is thus very rigidly supported. Since the greater part of it is directly in the slip stream of the screw, it is made of very fair streamline section, as may be gathered from the photograph No. A, and in general is much lighter and far better constructed than the usual German gun mounting. The accepted type of bracket and locking device is employed. Both portions of the ring are made of wood covered with doped fabric.

Fabric.

The fabric is of the usual quality found on the better class of German aeroplanes. It is dyed with the familiar polygonal camouflaged scheme of colours, and is applied to the wings



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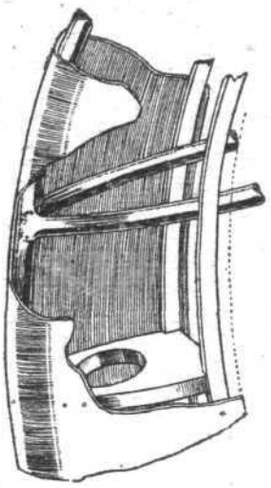

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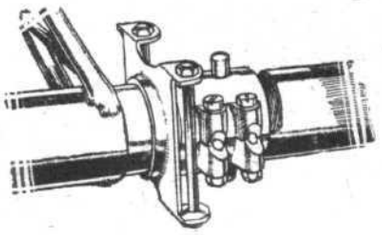

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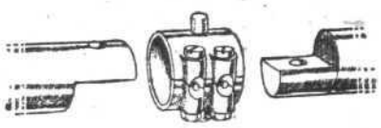

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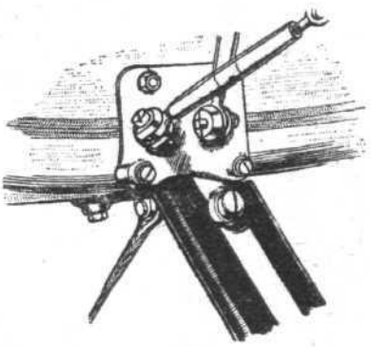

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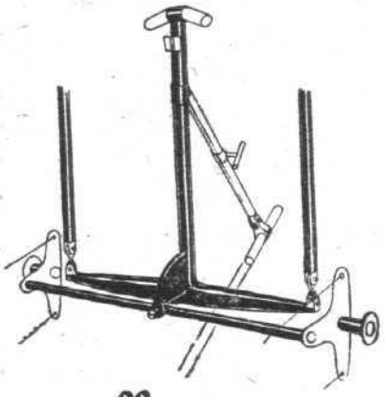

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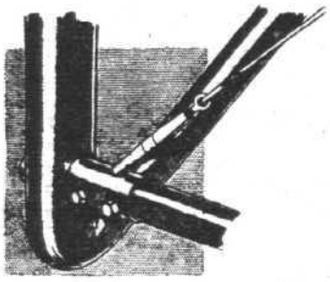

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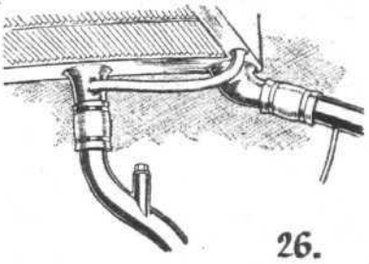

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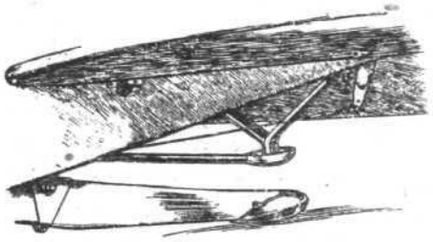

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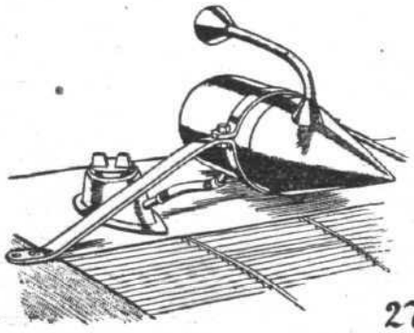

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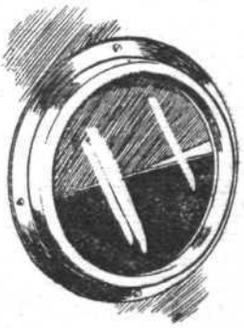

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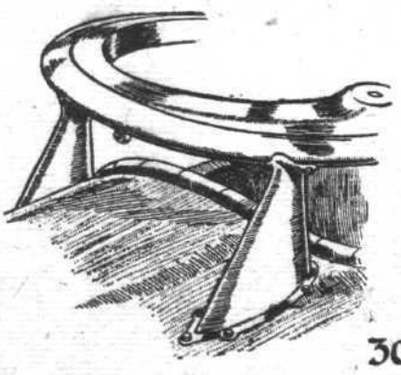

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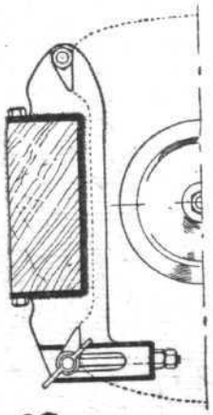

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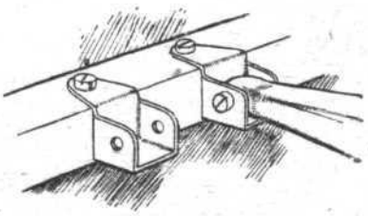
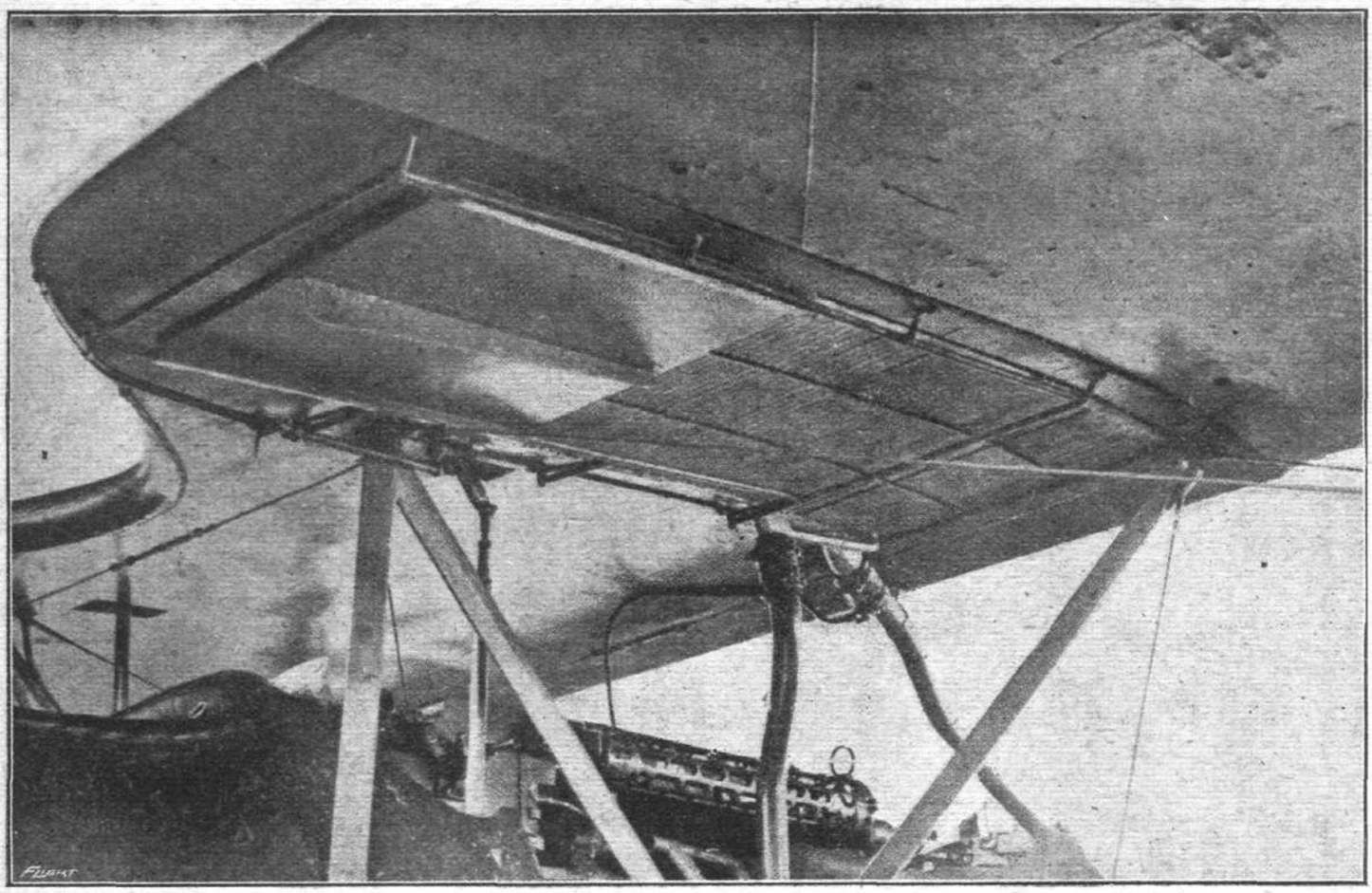
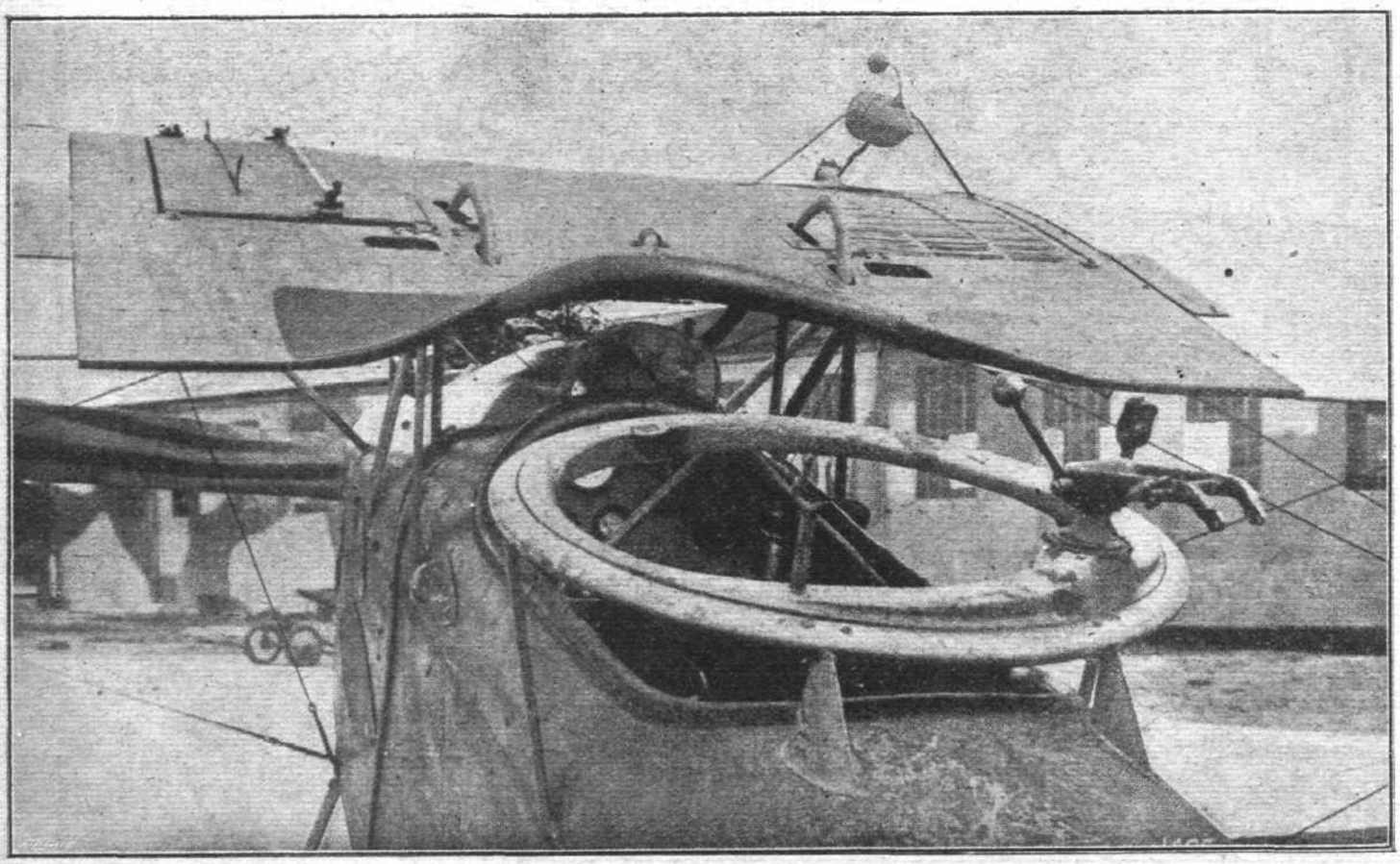


31.

More constructional details of the Halberstadt fighter. (Figs. 18 to 31.)



A. View of underside of centre section, showing radiator and shutter, machine gun and *cabane* struts.



B. View of cockpits, showing *aileron* cranks, gun ring, radiator and gravity petrol tank.

with the warp and weft at an angle of 45 deg. to the spars. The reason for this method of wing covering is not clear. The dope used appears to be good. The body work and also the centre section of the top plane are covered with a scumble of colours arranged in indefinite areas and shading into one another. The colours used are a cloudy yellow, dark and light greens, brown, purple and a light blue. The belly of the *fuselage* is coloured yellow throughout.

Fittings.

In the floor of the observer's cockpit, is a bracket for a camera of one metre or more focal length. Detachable tubes for supporting the upper end of the camera are furnished, and for this purpose clips are fitted on the *fuselage* members. A sliding trap door underneath the camera fitting is provided. Plugs at convenient points are arranged for the electrical heating circuit. The observer's seat is of the folding type, and is placed very low, so that when he occupies it, the observer is well below the level of the top of the *fuselage*, and is thus completely hidden from view. The pilot's seat is adjustable fore and aft, and is carried on light built-up cross bars dropped into sockets bolted to the *fuselage* members. The form of the sockets is shown in Fig. 31.

Compass.

The compass, which is of the usual German pattern, presenting no new features, is fitted in a circular box near the root of the left-hand wing, where it is immediately under the view of the pilot.

Schedule of Principal Weights.	lbs.	ozs.
Total weight	2,532	0
Upper wing, complete with *aileron*, *aileron* rod, drag bracing, and strut attachments, but without lift bracing wires and fabric	62	6
Lower wing, as above (no *aileron* fitted)	52	8
Aileron complete, without fabric	7	12
Aileron bar, with flange	4	0
Interplane strut, front, without bolts	3	3
,, ,, rear, ,, ,,	3	14
Centre section, complete, with radiator and gravity tank, *aileron* control crank, and bracing wires	101	0
Fixed tail plane (each), with fabric	7	8
Rudder, complete, with fabric	7	8
Elevator, complete, with hinge clips and fabric	12	0
Fin, complete, with fabric	9	6
V centre section strut	2	7
Straight centre section strut	3	2½
Undercarriage, complete, with struts and bracing, wheels, tyres, and shock absorbers	102	0
Shock absorber (multiple coil spring type), each	4	6
Axle, with shock absorber bobbins and caps	14	8
Wheel, with tyre	20	4
Tyre and tube	8	12
Wings, leading spar, per foot run	1	4
Wings, trailing spar, per foot run	0	14½

Historical Note.

The present Halberstadt fighter is a development of the earlier single-seater, an example of which was brought down on October 29th, 1917. [*A similar machine was described and illustrated in "*FLIGHT*" for April 5th, 1917, and August 23rd, 1917.*—ED.] In the latter case ash was used to a fairly large extent, both in the *fuselage* and wings, but in the more modern design spruce is exclusively adopted. The rear spar was of the ordinary I-Section type without three-ply reinforcement. The *fuselage*, of somewhat similar shape, was fabric covered. Balanced elevators and rudder were fitted, but no fixed tail-plane or fin. The arrangement of the centre section, with tank and radiator, was substantially the same. Double bays of interplane struts were adopted, but the struts themselves were of the welded-up tapered pattern. The *ailerons* were controlled by wires, and not, as in the present example, positively. Both planes had the same chord, and the upper wings had an overhang. The weight of the complete machine, without pilot, was 1,778 lbs.

Both the Halberstadt machines are at the Enemy Aircraft View Room, Agricultural Hall, Islington, where they may be seen on production of a pass, obtainable from the Controller, Technical Department, Ap. D. (L.), Pen Corner House, Kingsway, W.C.2.

▣ ▣ ▣ ▣

THE ROYAL AERO CLUB OF THE U.K.

OFFICIAL NOTICES TO MEMBERS.

FLYING SERVICES FUND COMMITTEE.

A MEETING of the Flying Services Fund Committee was held on Thursday last, the 3rd inst., when there were present :—Lieut.-Col. T. O'B. Hubbard, R.A.F., in the Chair; Lieut.-Col. H. G. Gold, R.A.F., Mr. Chester Fox and Lieut.-Com. H. E. Perrin, R.N.V.R., Secretary.

Grants and Allowances.—The following Grants and Allowances were made :—

32. A grant of £10 to a late 1st Class Air-Mechanic in the Royal Flying Corps who had been incapacitated on active service.

45. A grant of £10 to a late 1st Class Air-Mechanic in the Royal Flying Corps who had been incapacitated on active service.

73. An allowance of £2 a month for six months to the widow of a 3rd Class Air-Mechanic in the Royal Flying Corps who had been killed on active service.

74. A grant of £10 to the mother of a Corporal in the Royal Flying Corps who had been killed on active service.

82. An allowance of £2 a month for six months to the widow of a 1st Class Air-Mechanic in the Royal Flying Corps who had been killed on active service.

83. An allowance of £3 a month for six months to the widow of a 1st Class Air-Mechanic in the Royal Flying Corps who had been killed on active service.

84. An allowance of £2 a month for six months to the widow of a Sergeant in the Royal Flying Corps who had been killed on active service.

86. A grant of £5 and an allowance of £2 a month for six months to the widow of a 1st Class Air-Mechanic in the Royal Flying Corps who had been killed on active service.

88. An allowance of £2 a month for six months to the step-mother of a 3rd Class Air-Mechanic in the Royal Flying Corps who had been killed on active service.

89. An allowance of £2 a month for six months to the widow of a Private in the Royal Flying Corps who had died from injuries received on active service.

92. An allowance of £2 a month for six months to the widow of a 2nd Class Air-Mechanic in the Royal Flying Corps who had been killed on active service.

94. An allowance of 25s. a month for twelve months to a Corporal in the Royal Flying Corps who had been incapacitated on active service.

THE FLYING SERVICES FUND

(*Registered under the War Charities Act*, 1916).

Honorary Treasurer:
The Right Hon. LORD KINNAIRD.

Committee:
Brig.-Gen. W. W. WARNER, R.A.F. (*Chairman*).
MR. CHESTER FOX.
Lieut.-Col. HARCOURT G. GOLD, R.A.F.
Lieut.-Col. T. O'B. HUBBARD, M.C., R.A.F.
Lieut.-Col. C. E. MAUDE, R.A.F.

Secretary:
Lieut.-Com. H. E. PERRIN, R.N.V.R.

Bankers:
Messrs. BARCLAY'S BANK, LTD., 4, Pall Mall East, London, S.W. 1.

Objects:

The Lords Commissioners of the Admiralty and the Army Council having signified their approval, THE ROYAL AERO CLUB has instituted and is administering this Fund for the benefit of Officers, Non-Commissioned Officers and Men of the Royal Air Forces who are incapacitated on active service, and for the widows and dependants of those who are killed.

Subscriptions.

	£	s.	d.
Total subscriptions received to Oct. 1st, 1918	13,185	9	6
S.W. Area Recreational Training Association, Headquarters, Royal Air Force, Salisbury (second contribution)	140	9	2
One-third of the proceeds collected at a Fair under the auspices of No. 2 School of Aeronautics, Royal Air Force, Christ Church, Oxford, in aid of the Red Cross, Oxfordshire Prisoners of War and Flying Services Fund	108	0	0
Miss M. Warner (Boston Spa)	2	2	0
Total, October 8th, 1918	13,436	0	8

Offices: THE ROYAL AERO CLUB,
3, CLIFFORD STREET, LONDON, W. 1.

H. E. PERRIN, Secretary.

THE FOKKER BIPLANE, TYPE D VII.

(*Continued from page* 1116.)

IN our last instalment the construction of the Fokker biplane body was dealt with in detail. Before turning our attention to the wings, it may be as well to refer briefly to some of the equipment and accessories which, although being attached to or mounted in it, do not form a part of the main body structure.

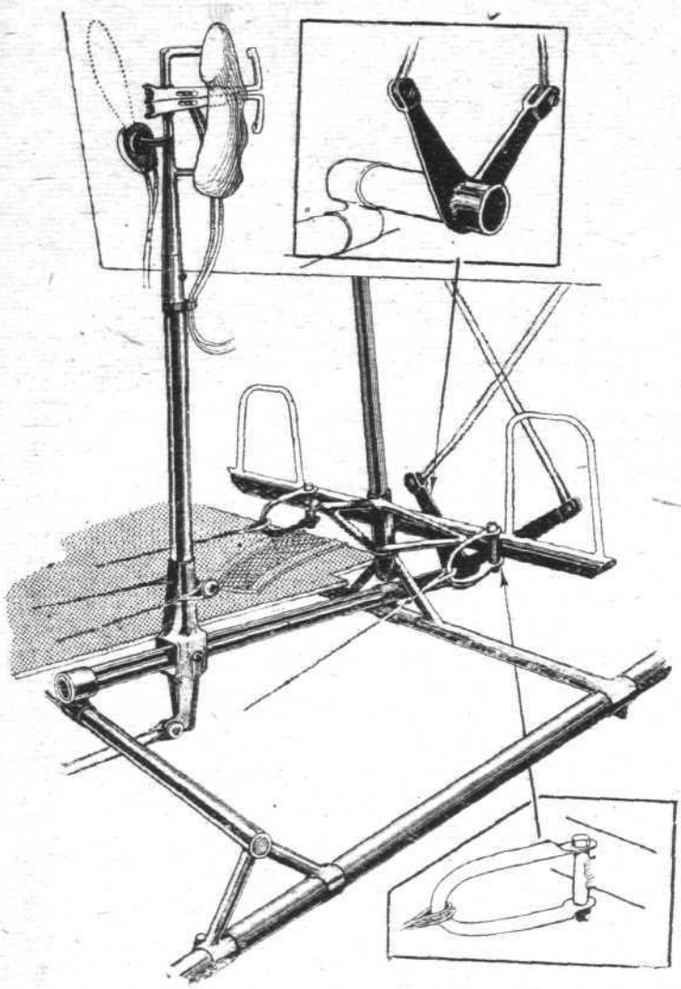


Fig. 5.—Sketch showing controls of Fokker biplane. The insets show the *aileron* control crank arms and the rudder cable shackles respectively.

The Controls.

In principle the controls of the Fokker biplane are very similar to those of the triplane described in our issue of May 9th, 1918, but some of the details are somewhat different. Fig. 5 is a perspective view of the controls. A longitudinal rocking shaft is carried in two bearings, formed by clips bolted to transverse tubes in the bottom of the body. The control column, which is a steel tube tapering towards its upper end, fits into a tapering socket that is in turn welded to the collar surrounding the longitudinal rocking shaft. The downward projection of the column is similarly welded to the bottom of the collar. It will thus be seen that a welded joint is relied upon for the main elevator cables, a feature which places great reliance on the excellence of the welded joint.

The longitudinal rocking shaft has a forward projection, on which are carried the two crank arms operating the *aileron* cables. These two cranks are formed of sheet steel bent over so as to form a stream-line section with its sharp edge pointing downwards. They are placed at an angle of about 100° to one another, and are, in addition, staggered, the port arm being in front of the starboard one. The rudder bar, as in the Fokker triplane, is in the form of a steel tube secured to its collar as shown in the sketch and pivotting on a vertical tube secured at its top to one of the *fuselage* cross struts, and at the bottom to one of the bottom cross struts *via* a fork formed by two short tubes as shown, in order to clear the longitudinal shaft. The pilot's feet ure prevented from slipping off by the tubular guards welded to the foot bar. The method of anchoring the rudder cables to the foot bar is interesting. On each side a short tube is welded to the side of the foot bar, and through this tube is passed a bolt which also goes through the arms of the stirrup or shackle that forms the final attachment for the rudder cables. Here again the controls put the

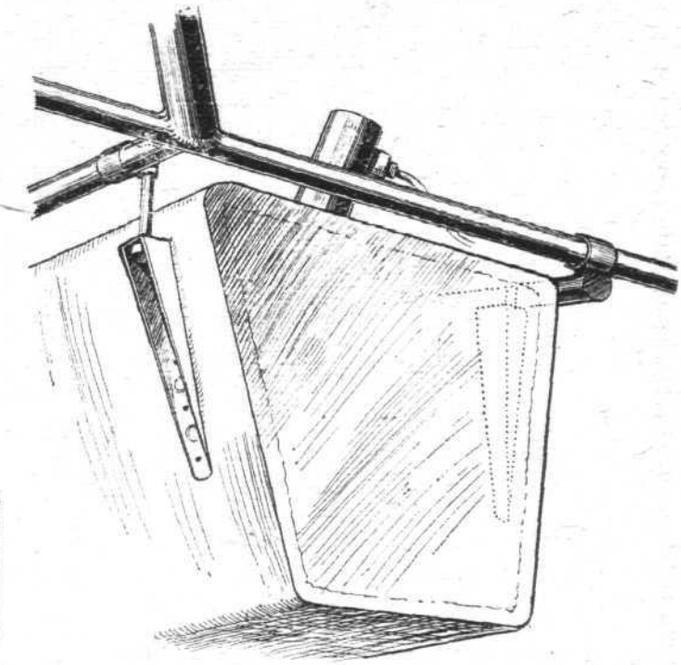


Fig. 7.—The tank of the Fokker biplane is slung by means of brackets and bolts as shown in sketch. There are no bands or other supports for the bottom of the tank.

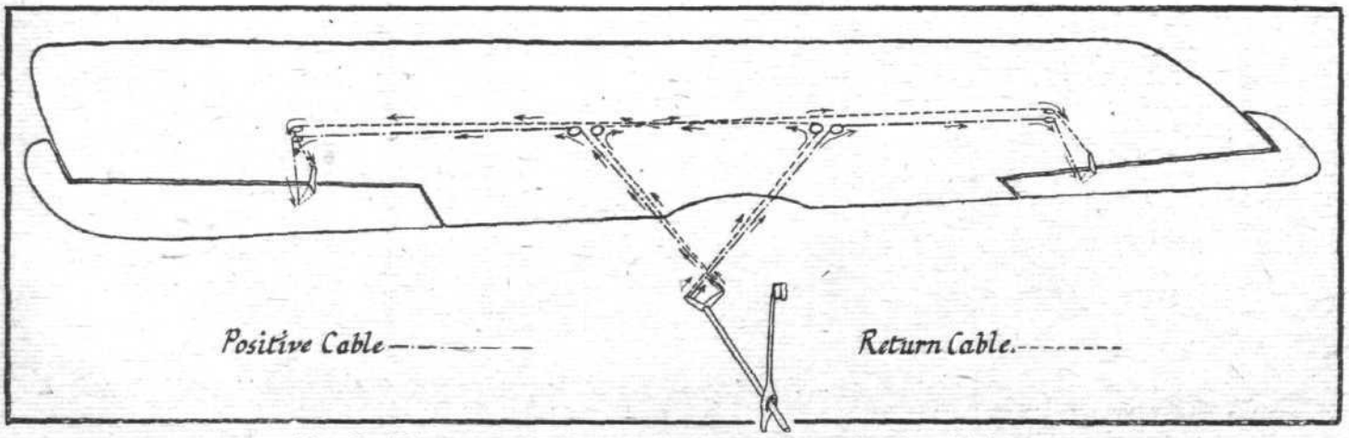


Fig. 6.—Diagram of *aileron* control system on Fokker biplane.

welded joints under tension. In the triplane the shackles passed over the foot bar, the vertical tubes being welded to the front of the bar, thus avoiding the tension on the welded joint. The method of making the shackles is very simple, as shown in the detail sketch of Fig. 5. A short length of tube of small diameter has its ends slotted and flattened out, holes being provided in the flat portion for the vertical bolt.

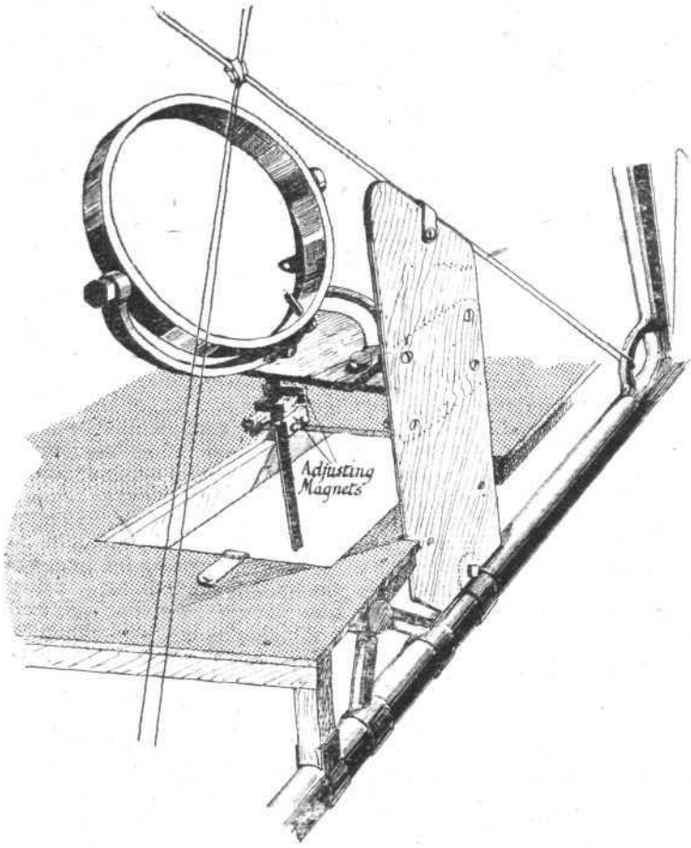


Fig. 8.—The mounting of the compass on the Fokker biplane. Note the adjusting magnets mounted on a square section brass rod under the base plate. These magnets are locked in position and sealed by a lead seal.

The tube is then bent and the shackle is finished. In Fig. 5 the floor boards have been omitted on the starboard side to show the controls, but under the left foot guard will be seen a segment of aluminium which serves to protect the floor against the constant rubbing of the pilot's heel. Another such guard is, needless to say, fitted under the right foot.

The grip in which the control column terminates at its upper end is quite different from that found on the Fokker triplane. In the present machine the grip consists of a small piece of wood, shaped to fit the fingers of the right hand, and having a slight hollow at the top for the thumb. The triggers for the machine guns are not pushed by the thumb as in the majority of other machines, but are pulled by the fingers towards the grip. On the port side of the control lever is mounted a Bowden control for the throttle. The handle of this had been knocked off in the machine examined, so it has been impossible to ascertain its exact shape. It has therefore been shown dotted in the sketch. This lever does not operate the throttle direct, but is connected to the proper throttle lever mounted on the port side of the body by Bowden cables. The object evidently is to enable the pilot to work the throttle from the control lever during a fight, instead of having to shift his hand and possibly fumbling about for a few seconds before getting hold of the main throttle lever. It will be noticed that no provision has been made in the biplane for locking the elevators in position, the necessity for doing this having apparently been avoided by the arrangement of the gun and engine controls.

Before leaving the subject of controls reference may be made to the lateral control system of the Fokker biplane, which is somewhat unusual. In order to facilitate an explanation of the principle on which the *aileron* control is based, we have prepared a diagram, Fig. 6, which shows, in purely diagrammatic form, the paths followed by the *aileron* cables over the various pulleys. It will be noticed that the lower plane has not been included in the diagram. This is due to the fact that nowhere do the *aileron* control cables pass over or through the bottom plane, as is usually the case in German machines, specially when the typically German *aileron* crank levers, working in slots in the top plane, are fitted. In the Fokker-biplane the crank levers are vertical as in British machines. So far as one is able to judge, the object which the designer had in mind when working out this control system was to provide positive control, not only to the *aileron* that is being pulled down, but also to that being pulled up. The manner in which this object has been attained in the Fokker will be understood by a reference to Fig. 6. In the explanation to follow we shall refer to the cable pulling down the *ailerons* as a positive cable, and to that pulling up the *ailerons* as the return cable. In the diagram the two sets of cables have been drawn differently, the positive cable being shown by a chain dotted line, while the return cables are indicated by a plain dotted line. From the crank on the longitudinal rocking shaft in the *fuselage* the positive cable runs through a guide on the top *longerons* (not shown), over a pulley mounted on the top rear spar, along the spar, around another pulley, and hence to the lower *aileron* crank. The return cable from the same crank arm in the body runs through the same guide on the top *longeron*, to a pulley at the side of that for the positive cable, along the spar in the opposite direction to that of the positive cable, over another pulley and hence to the top crank of the *aileron*. The arrows in the diagram will help to make the arrangement clear. Thus, when the control lever is pulled to port, the positive cable pulls down the starboard *aileron*, and the return cable pulls up the port *aileron*.

Tanks.

As far as we have been able to ascertain, all the tanks carried on the Fokker biplane have been incorporated in one single tank of brass. The oil tank occupies the extreme starboard side of the tank, then comes a small reserve tank, and on the port side, partitioned off from the reserve tank, the main tank, which, judging from the lines of rivets visible on the outside, is divided up into two compartments communicating

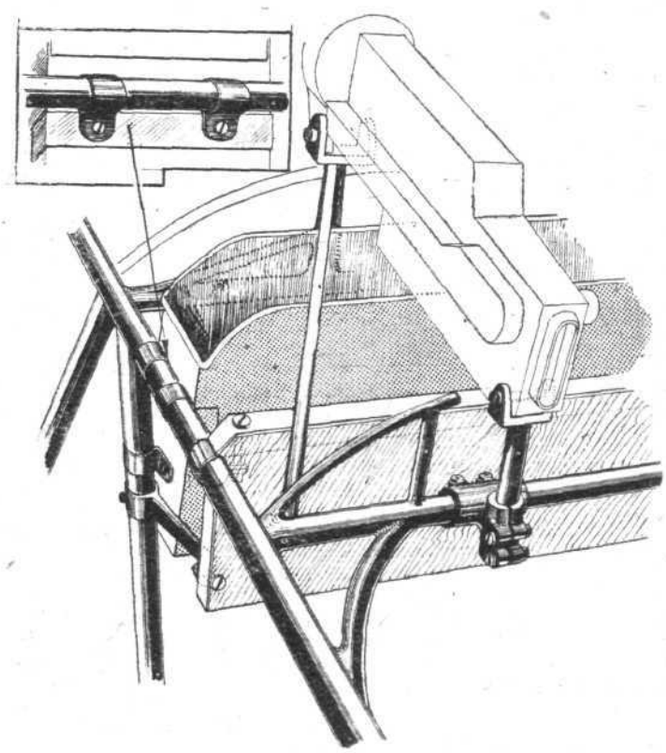


Fig. 9.—Sketch showing mounting of one of the Spandau guns on the Fokker biplane. Inset, the clips securing the cartridge boxes to the *fuselage*.

with one another. From external measurements the capacity of the various tanks is approximately as follows: Oil tank, 3 gallons; petrol, 20 gallons. These figures are only approximate. Both petrol tanks work under pressure, supplied by two pumps, one driven by the engine and the other hand operated. As shown in Fig. 7, the mounting of the tank is rather unusual, there being no supporting bands passing underneath the tank, which is slung from the top cross tubes of the body by means of brackets and bolts, as shown.

Instruments.

The instrument board of the Fokker biplane is not a very elaborate affair, the "gadgets" being few in number, compared with the instrument boards of some of our own machines. Especially noticeable in all German machines, with the exception of some of the later Gothas, is the absence of speed indicators. In the case of the Fokker it is possible that some of the instruments may have been removed, although there are no indications that more have been fitted than those now in place on the machine. On the port side of the instrument board is the hand magneto, surmounted by its switch. In the centre are the two petrol pressure indicators, and underneath them the petrol and pressure cocks. In the top right-hand corner is a grease pump for the water pump. Mounted on the starboard body struts is the hand-operated petrol pump and the compass. The mounting of the latter is somewhat unusual, as shown in Fig. 8. A small piece of three-ply wood is clipped at its upper end to one of the body bracing wires and at its lower end to the bottom *longeron*.

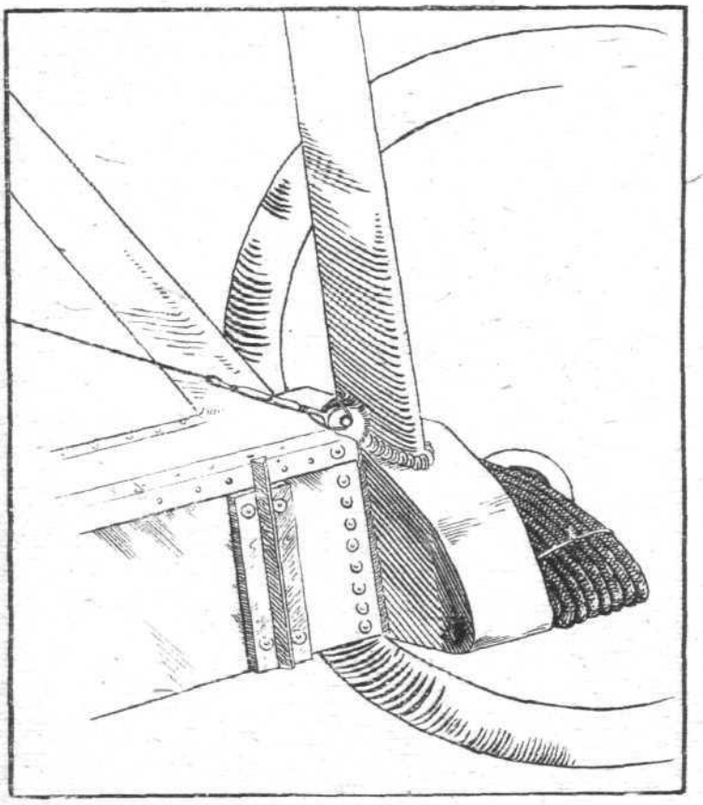


Fig. 10.—The lower ends of the chassis struts of the Fokker biplane are welded to sheet-steel boxes, which carry the shock absorbers, and to which is also attached (by rivets) the aluminium box surrounding the axle.

Mounted on this is the bracket that carries the compass. The base plate is provided with a curved slot which allows of adjusting the placing of the compass in relation of the centre line of the body. A brass bar of square section projects downwards from the base plate, and on this are mounted the adjusting magnets. These are evidently placed initially by experts, and the pilot is not permitted to interfere with them in any way, as they are locked in position and sealed with a lead seal. One would imagine that in an all-steel body like that of the Fokker, the size and number of the adjusting magnets necessary would be considerable; yet this does not appear to be the case.

The throttle and ignition control levers are placed at the pilot's left hand. As already pointed out when describing the main controls, the throttle lever is connected up with Bowden cables to a throttle lever on the control column. The main throttle lever operates the throttle *via* a series of rods and cranks. The ignition is similarly controlled.

Armament.

The armament consists of two Spandau machine guns, provided with the usual interrupter gear for firing between the blades of the airscrew. The mounting of the machine guns is indicated in Fig. 9. Each gun is provided with two supports, and a certain measure of rigidity is added by running a tube from the front support rearwards and outwards to the end of one of the top cross struts. As in other German machines, the rear gun support allows of vertical adjustment, while the front support provides for a slight adjustment laterally. The cartridge boxes are of sheet aluminium, and do not present any features of particular interest.

Radiator.

The honeycomb radiator, which is unusual for a German machine, in that it is placed in the nose of the *fuselage*, is of Vee shape as seen in plan. The apex of the Vee is cut off, however, forming a flat of approximately 4 ins. width down the extreme front of the radiator. The left half of the curved top of the radiator forms a small water tank, while the right half is simply a curved fairing. Provision has been made for varying—although apparently to a very small extent—the cooling by placing a small door or shutter over the starboard side of the radiator. This door, which is placed on the inside, behind the radiator, is normally allowed to trail in the line of flight, but can be pulled against a spring by means of a cable so as to lie flat against the back of the radiator. When closed this door only covers a small portion of the radiator, less than one-third, so one does not imagine that the amount of control over the cooling is very great. The mounting of the radiator will be fairly clear from Figs. 1 and 4 in our last issue.

The Undercarriage.

The undercarriage of the Fokker biplane is of the simple Vee type, with stream-line steel tube struts. At their upper ends the struts terminate in balls fitting into sockets welded to the *fuselage* members, and are prevented by a short bolt from coming out of the socket. At the lower end the undercarriage struts are welded to a sheet steel box, in which is a slot for accommodating the travel of the axle. This sheet steel box also serves as a support for the short stubs to which are anchored the shock absorbers. These are of the coil spring type, enclosed in a woven covering after the fashion of rubber cord. An aluminium box, formed of sheet, connects the port and starboard boxes and serves as the main spar of the fairing, or wing section, surrounding the axle. This section was severely damaged in the machine examined, and its exact shape is therefore a matter of surmise, but it appears probable that in section it was very similar to the wings. From what little remains of it this section appears to have been covered top and bottom with three-ply wood. In addition to serving as a fairing for the axle this section probably gives a not inconsiderable amount of lift, especially when landing, when there would be a "cushioning" effect due to the proximity of the section to the ground. The diagonal bracing of the undercarriage is in the form of stranded cable in the front bay only. The cables are attached at the lower end to a forked lug welded to the wall of the struts. One of these lugs, as pointed out in our preliminary description of the Fokker biplane, had pulled a triangular portion of the strut wall out, although the weld itself appeared undamaged. At the upper end, the bracing cables of the undercarriage are simply passed around the bottom *longerons* and spliced. This feature was shown, incidentally, in Fig. 2 in last week's issue of "FLIGHT."

(*To be continued.*)

◈ ◈

An American Altitude Record.

A MESSAGE from New York states that the contest committee of the Aero Club of America has recognised the altitude record of 28,900 ft. above sea level made by Capt Ruddy W. Schroeder on September 18th at the Wilbur Wright Field, Fairfield, Ohio, in a Bristol fighting plane, with a 300 h.p. Hispano-Suiza motor. It is stated that the record has also been recognised by the United States Government.

D'Annunzio in France.

MAJOR GABRIELE D'ANNUNZIO arrived at Chalons from Turin by way of the air on September 26th. He was on his favourite S.P.A. machine "Serenissimo," piloted by Capt. Palli, and the trip, although the weather was unfavourable, when crossing the Alps, occupied nearly three hours.

After spending a week visiting the Italian sector of the front and General Berthelot's Army, Major d'Annunzio returned to Turin by aeroplane, the trip taking three hours and ten minutes.

Escape after Two Years.

LIEUT. ANGST, a French observer, who was taken prisoner in July, 1916, and has been interned in Wulsburg, Germany, has succeeded, after several attempts, in escaping to France.

FLIGHT
AIRCRAFT ENGINEER

THE ROLL OF HONOUR

(When an Officer is seconded from the Army, his unit is shown in brackets.)

Published October 2nd.

Killed.

Freeman, Sec. Lieut. H. A.
Lewis, Lieut. A. V.
MacNamara, Lieut. A. W.
Morgan, Lieut. E. S.
Parks, Sec. Lieut. A. E
Simpson, Sec. Lieut. R.
Smith, Sec. Lieut. W. P.

Previously Missing, now reported Killed.

Cuthbert, Lieut. J. B.

Accidentally Killed.

Allen, Lieut. G. D. (Aus. F.C.).

Wounded.

Danger, Lieut. E. O.
Eveleigh, Sec. Lieut. E. P.
Kullberg, Lieut. H. A.
Matthews, Sec. Lieut. G. G.
Moss, Sec. Lieut. C. H.
Mullen, Sec. Lieut. H. S.
Nowell, Sec. Lieut. R. P.

Previously Missing, now reported Wounded and Prisoner in German hands.

Sellars, Lieut. F. M. (R. Newf.).

Missing.

Adams, Sec. Lieut. N. F.
Anslow, Sec. Lieut. F. F.
Ayrton, Capt. F. A.
Carter, Lieut. D. C. (Aus. F.C.).
Cole, Sec. Lieut. W. H.
Eddie, Sec. Lieut. M. H. (Aus. F.C.).
Jenkins, Sec. Lieut. B. P.
Keble, Sec. Lieut. F. J.
Lockley, Lieut. A. H. (Aus. F.C.).
Mercer, Sec. Lieut. H. (E. Lan. R.).
Naylor, Lieut. C. B.
Senecal, Sec. Lieut. C. H.
Stone, Sec. Lieut. R. H.
Taplin, Lieut. L. T. E., D.F.C. (Aus. F.C.).

Interned.

Cox, Lieut. F. B.
Harrison, Capt. W. R. E.
Lister, Lieut. J. J.
MacDonald, Lieut. J. J.
McManus, Sec. Lieut. G. E.
Thomas, Sec. Lieut. G.

Published October 3rd.

Killed.

Bourke, Sec. Lieut. T. L.
Clarke, Sec. Lieut. J. F. (Midd'x.).
Coghill, Sec. Lieut. A. O.
Plummer, Lieut. F.
Rose, Sec. Lieut. S. L.
Savage, Lieut. H. L.
Steward, Sec. Lieut. R. T.
Wilkin, Lieut. G. S.

Wounded.

Coler, Lieut. E. S.
Corbett, Lieut. E. J.
Dixon, Sec. Lieut. B.
Dixon, Capt. G. C. (H.L.I.).
Hawthorn, Lieut. S. J. (N. Staff.).
Kettener, Lieut. H. M.
Sutton-Page, Capt. P., M.C. (R. Fus.).

Missing.

Arnott, Sec. Lieut. L.
Bishop, Sec. Lieut. N. F.
Bryars, Sec. Lieut. G. L.
Chreiman, Sec. Lieut. W. W.
Elder, Sec. Lieut. J. J.
Felton, Sec. Lieut. H. A.
Ferreira, Sec. Lieut. J. P.
Fleming, Sec. Lieut. P. J. A.
Glen, Lieut. J. (Sco. Rif.).
Kellow, Sec. Lieut. W.
Kempsall, Sec. Lieut. H. T.
King, Sec. Lieut. F. W.
Matthews, Sec. Lieut. J. A.
Montgomery, Lieut. J. R.
Norris, Sec. Lieut. E. J.
Ostler, Lieut. A., M.C. (R.F.A.).
Senior, Sec. Lieut. H. H.
Simmonds, Sec. Lieut. L. B.
Timson, Lieut. P. W. J.
Walker, Sec. Lieut. J. E.
Wilson, Sec. Lieut. W. A.
Wright, Lieut. E. F.
Yeomans, Lieut. J. H. M. (N. Staff.).

Published October 4th.

Killed.

Jackson, Lieut. C. T. (N. Lanc.).
Kendall, Sec. Lieut. F. D.
O'Connor, Capt. T.
Ralph, Sec. Lieut. F. J.
Rourke, Sec. Lieut. B. S.
Rymal, Sec. Lieut. W. A.
Smyth, Sec. Lieut. G. H.
Stone, Lieut. W. H.

Wounded.

Band, Sec. Lieut. L. C.
Black, Lieut. F. G. (Cent. Ont.).
Clark, Lieut. C. H.
Cotter, Sec. Lieut. B. C.
Grant, Sec. Lieut. A. G.
Tanner, Maj. F. L. (Nova Scot.).

Missing.

Andrews, Sec. Lieut. E. B. (R.F.A.).
Brisbin, Lieut. H. V. (Cent. Ont.).
Chainey, Sec. Lieut. F. H. (Suff.).
Cobham, Lieut. R. L. (S. Notts. Yeo.).
Cole, Sec. Lieut. R. H.
Dodd, Lieut. H. R.
Down, Sec. Lieut. R. E.
Fairhurst, Sec. Lieut. A.
Gallagher, Lieut. E. S.
Hyde, Lieut. H. E.
Jeffkins, Sec. Lieut. E. C.
Johnson, Lieut. F. R.
Lacy, Sec. Lieut. J. B.
Miller, Sec. Lieut. W. J.
Mitchell, Sec. Lieut. G. W. (York.).
Monaghan, Lieut. H. B.
Norcross, Lieut. B.
Owen, Sec. Lieut. R. E.
Phillips, Sec. Lieut. T. M.
Pitman, Lieut. R. C. (Nova Scot.).
Toulmin, Lieut. H., M.C.
Whalley, Capt. R. L.

Previously Missing, now reported Prisoner in German hands.

Belliveau, Lieut. A. H. (Can. For. C.).

Published October 5th.

Killed.

Desmond, Sec. Lieut. S. M.
Phillips, Capt. J. E.
Radloff, Lieut. H. (Lond.).
West, Sec. Lieut. W. G. (R.G.A.).

Died of Wounds.

Bond, Sec. Lieut. T. J.
Cannon, Lieut. S. L. (Shrops. L.I.).
Henderson, Lieut. T. O.

Cadets Killed.

Bamber, W. K.
Caldwell, E. V. J. D. L.
Doe, J. E. K.
Elliott, C. E.
Frizzelle, N. S.
Harrison, H. R.
McLean, A.
Winstanley, A.

Wounded.

Frost, Sec. Lieut. C. S.
Greenyer, Sec. Lieut. R.
Herdus, Sec. Lieut. B.
Hern, Lieut. H. R.
Partridge, Sec. Lieut. A. A.
Turnbull, Sec. Lieut. J.

Missing.

Bishop, Lieut. A. G.
Cooper, Sec. Lieut. G. W.
Hubbard, Sec. Lieut. H. B.
Huycke, Sec. Lieut. F. A.
Taylor, Lieut. E. B.
Usher-Somers, Sec. Lieut. C. E.
Watkins, Lieut. J. E.

Published October 7th.

Killed.

King, Lieut. A. J. C.
Moodie, Sec. Lieut. H. M. (Sea. H.).
Philip, Lieut. L. A.
Ravine, Sec. Lieut. C. C. G.
Revelle, Sec. Lieut. R. C. (Oxf. and B. L.I.).
Robertson, Sec. Lieut. A. G.

Previously Missing, now reported Killed.

Whitehead, Lieut. A. G. (W. Yorks., attd. R.F.C.).

Previously Missing, subsequently reported Prisoner, now presumed Killed.

Gray, Flt. Sub-Lieut. A. J., R.N.

Died of Wounds.

Thompson, Lieut. A. H. (Cent. Ont.).

Wounded.

Battle, Sec. Lieut. H. F. V.
Boxhall, Sec. Lieut. R. A.
Brown, Sec. Lieut. W. G.
Dowling, Sec. Lieut. F. L. W.
Firby, Lieut. G. A.
Hill, Lieut. K. S.
Joelson, Lieut. S. H. (R. Fus.).
Lewis, Lieut. T. H. (Lanc. F.).
Litherland, Sec. Lieut. G. T.
Miller, Sec. Lieut. L.
Playford, Lieut. E. R. B. (R.F.A.).
Roberts, Sec. Lieut. E. L.
Rowe, Sec. Lieut. J. J.
Sanderson, Lieut. J. I.

Missing.

Caswell, Lieut. G. F. C.
Eaves, Sec. Lieut. C. C.
Fowler, Sec. Lieut. A. C. G.
Helwig, Lieut. N. W. (Cent. Ont.).
Kewley, Lieut. B. H. (Manit.).
Kier, Sec. Lieut. I. N.
Larrabee, Lieut. E. P.
Mahony, Lieut. M. R. (R.I.R.).
Mill, Sec. Lieut. J.
Milne, Sec. Lieut. C. G.
Ware, Lieut. D. C. (King's L'pool.).
Yelverton, Sec. Lieut. C. N. (Hants).

Previously Missing, now reported Prisoner in German hands.

McCulloch, Sec. Lieut. A. F. (Aus. F. C.).

Published October 8th.

Killed.

Baillie, Sec. Lieut. F. W.
Davies, Maj. T. L., M.C. (R.F.A.).
Dawson, Capt. W. E. (R.F.A., T.F.).
Lord, Lieut. L. McL.
Scotcher, Capt. W. G.

Died of Wounds.

Hogan, Sec. Lieut. J. W.

Wounded.

Baillieu, Lieut. T. L. (Aus. F.C.).
Barber, Sec. Lieut. C. W. C.
Brisbane, Lieut. J. M.
Engel, Sec. Lieut. S.
Evans, Lieut. L. V.
Faulkner, Sec. Lieut. A. A.
Goble, Lieut. A. V.
Goodman, Sec. Lieut. F. W.
Johnson, Lieut. C.
McDonald, Sec. Lieut. A. B.
Mason, Sec. Lieut. H. C.
Matthews, Sec. Lieut. E. B.
Murton, Sec. Lieut. H. A.
Peacock, Capt. E. F.
Pyne, Sec. Lieut. R.
Ross, Lieut. J. S. (Aus. F.C.).
Sewell, Lieut. F. (Aus. F.C.).
Tunstall, Sec. Lieut. W.

Missing.

Fairburn, Sec. Lieut. F. E.
Gunn, Sec. Lieut. J. C. (High. L.I.).
Jackson, Sec. Lieut. F. X.
McLellan, Sec. Lieut. H. L.
Neville, Lieut. D. A.
Nicholson, Lieut. J.
Page, Lieut. D. F. V.
Richardson, Sec. Lieut. S. H.
Shanks, Sec. Lieut. D. A.
Turnull, Sec. Lieut. O. McI.
Wilson, Sec. Lieut. B. W. (Lond. (T.F.)).

Previously Missing, now reported Prisoner in German hands.

Taplin, Lieut. L. T. (Aus. F.C.).

Huns' Raid on Hospital.

ON the night of October 1st, a number of German machines raided the district of Chalons-sur-Marne and dropped 20 bombs on a clearing hospital, killing 60 patients and wounding as many more.

M. Clemenceau has written to M. Margaine, Deputy for the Marne, observing that the outrage was an episode in a long series of German crimes which would meet with just retribution when the day of reckoning comes.

The Late Colonel Hopkinson.

AT the opening of a new academical year at Cambridge University, on October 1st, the recent death of Col. Bertram Hopkinson, Professor of Mechanism, was referred to as being not only a crushing blow to the University, but a national disaster. The following letter which had been received from the Secretary of the Air Council, dated August 31st, was communicated to the Senate: "I am commanded by the Air Council to inform you that at their meeting yesterday a resolution was passed placing on record their deep sense of the high and permanent value of the work done for the Flying Forces by the late Col. Hopkinson, and their recognition of the patriotic self-abnegation with which he devoted his great abilities and scientific attainments to the public service; and they directed that there should be communicated to you, as representing the University of Cambridge, an expression of profound regret at his untimely death, and at the loss which has thereby fallen on the University of Cambridge."

Nanking's Gift to R.A.F. Hospitals.

THE Nanking Branch of the Overseas Club and Patriotic League has just sent £322 as a contribution to the Royal Flying Corps Hospital Fund. The club has subscribed over £28,000 towards the care of our wounded flying men.

AIRISMS FROM THE FOUR WINDS

How some of our boys who pilot our big bombers, unaccompanied by scouts, see it :—

"As we were going over the other night," writes a pilot, "we were attended by a lot of footling German scouts. They buzzed round about us all the way there and nearly the whole way back, but they did not dare come near us, for fear of our guns. They were really a sort of guard of honour for us."

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ANOTHER candidate for Parliament when that General Election comes along. Lieut. Wright Burrows, R.A.F., has been adopted as Liberal candidate for North Hackney.

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MOST of the early pioneers of flying are now past active participation in the war and have to confine their efforts to keeping up the supply of aircraft. It is all the more gratifying, therefore, to hear that Comte Jacques de Lesseps, who was the second aviator to fly across the Channel, has just been awarded the Cross of the Legion of Honour for bombing work and for six long reconnaissances involving a good deal of low flying. He has been four times mentioned in Orders.

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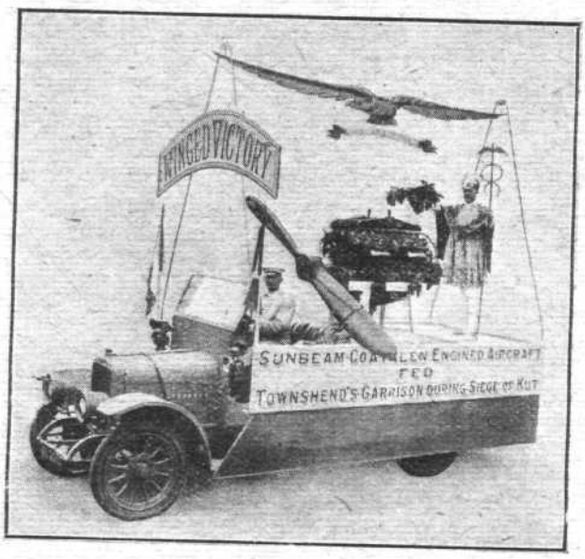
FOR a long time now the youth of America has walked abroad in a miniature "Stetson" hat, and complete khaki uniform; but this is now voted *vieux jeu*, judging from the advertisement that we have seen in a Transatlantic monthly. (Your attention is particularly called to the happy buoyancy of the wording!)

"The Sky-man Junior Suit," it reads. "It has that lean-as-a-greyhound, supple-as-a-wrestler look of the sky-man ready to take the air-line to Berlin." If that doesn't persuade the doting mother to git up little Elmer with a new set of "glad-rags," the clinching announcement at the close cannot fail to send her hot-foot to the store. It says that the suit "shows up a boy's figure with soldierly spruceness, hinting of the dauntless Escadrille ace, chumming with the clouds."

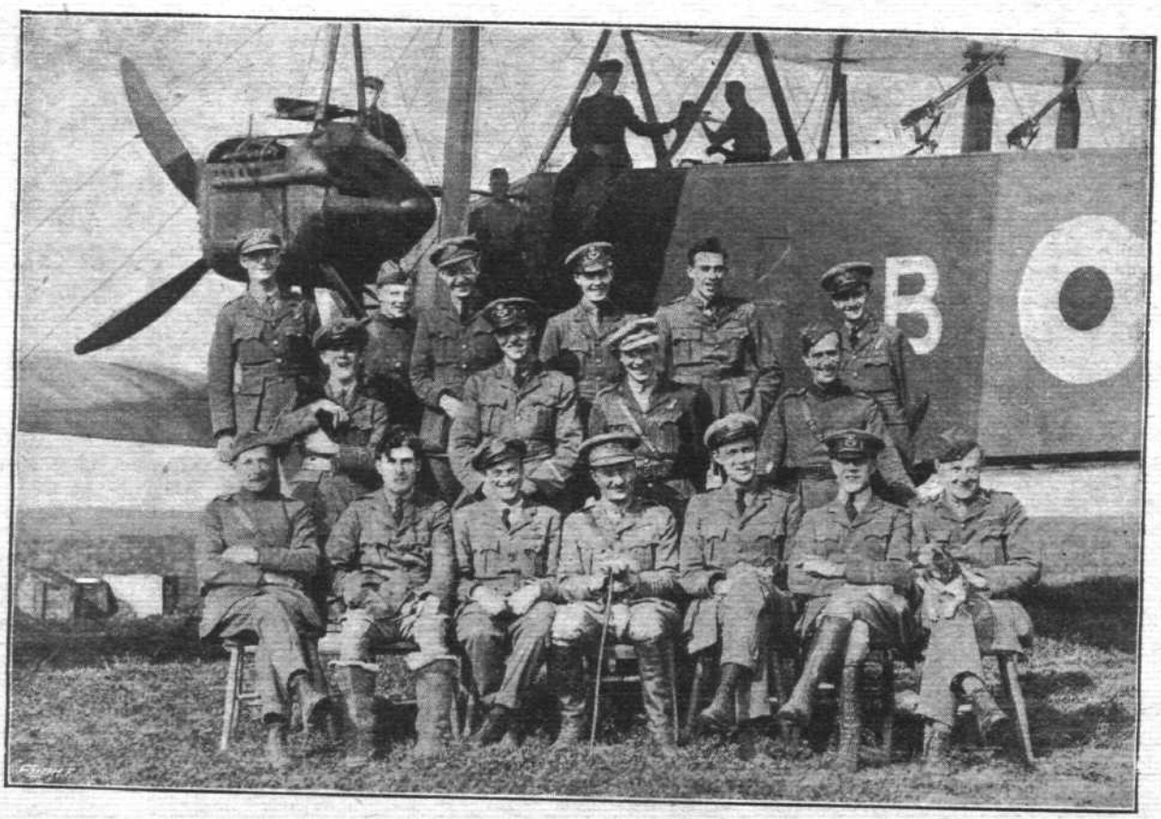
"FIRST came fifty girls of the Aircraft Department marching with a swing in their overalls at the head of the aircraft tableau and bearing the legend

"'WITH WOMEN WORKERS WE WILL WIN THE WAR.'



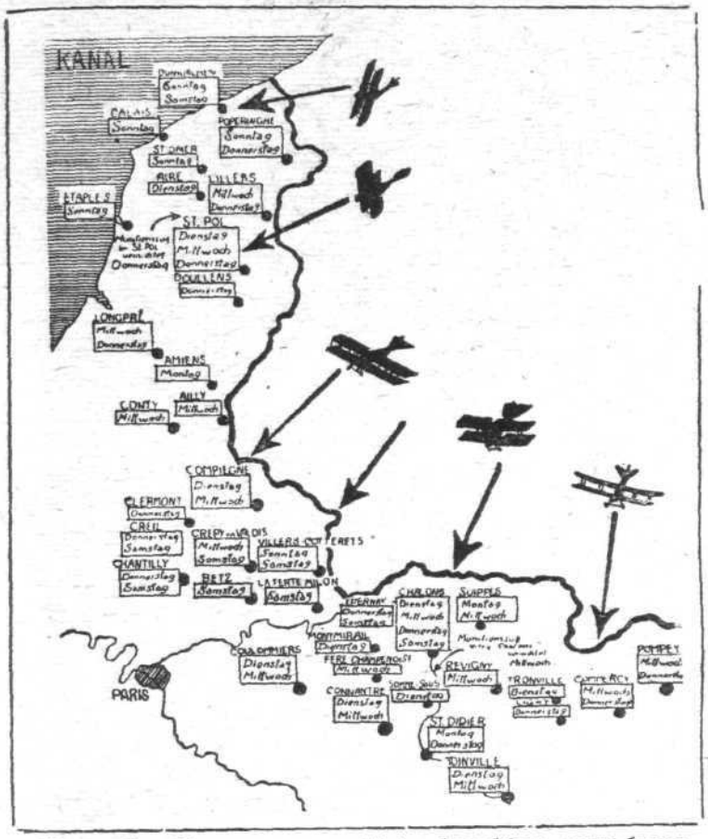
"WINGED VICTORY."—On the other side of this tableau, contributed to "Our Day" Pageant at Wolverhampton, is the legend: "SUNBEAM-COATALEN-ENGINED AIRCRAFT TOLD JELLICOE WHERE FRITZ WAS AT JUTLAND."

a biplane being attached to the tail of the lorry containing this pageant, which was completed by fifty machine and engine shop girls, marching in their overalls."



A group of "Tails up" pilots belonging to a bombing squadron on the British Western front in France.

Thus is outlined the head of the really remarkable 200-yard procession contributed by the Sunbeam Motor Car Co., Ltd., on "Our Day" to the Wolverhampton Red Cross Pageant. Our photographs elsewhere give an ocular demonstration of part of this display, which comprised over 500 out of the several thousands of workers taking part.



How the Germans say their bombing squadrons work.—A German contemporary publishes the above chart of places "of military importance" in France, which, the journal claims, were bombed in one week—from Sunday, July 14th, to Saturday, July 20th, 1918. During this period over 250,000 kg. (550,000 lbs.) of bombs were dropped, it is claimed. Each of the German words inside the rectangles denote a day of the week when bombs are claimed to have been dropped on the town whose name adjoins the rectangle.

Altogether the Sunbeam Co. were responsible, either through the management or by special departments, for nine tableaux.

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"WINGED VICTORY," another Sunbeam item, consisted of a now obsolete type of Sunbeam-Coatalen aircraft engine, with, according to the special description to hand, Mercury in classic trench pudding-basin headgear, with wings from the headpiece and from the heels, holding a laurel wreath over the engine, there being on one side of the car the legend:

"SUNBEAM-COATALEN-ENGINED AIRCRAFT TOLD JELLICOE WHERE FRITZ WAS AT JUTLAND,"

and on the other side:—

SUNBEAM-COATALEN-ENGINED AIRCRAFT FED TOWNSHEND'S GARRISON DURING THE SIEGE OF KUT."

Above the Mercury, endwise, was a sixteen foot golden Kiwi (the bird taken as the emblem of the Royal Air Force) executed by Mr. William Brown. A later aviation item from the Sunbeam was a tableau of the tribal names of the various Sunbeam-Coatalen engine models. Altogether a wonderful display.

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ANOTHER proposed German peaceful penetration scotched in the hoisting of the British flag at Spitzbergen. Having in mind the almost limitless fields for coal and oil, the Huns were seriously on the look out for quietly acquiring control away back in 1910, with that Chief-Robber Hun, Prince Henry of Prussia, in collaboration with the late Count Zeppelin as co-conspirators on behalf of their All-Highest. It was at Cross Bay where these two advance agents were experimenting with dirigibles at that time. It would have been an ugly jumping off ground for an enemy of the Hun capacity to hold.

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How is it we hear from America of such calamities as the closing down—or to be precise, the placing in the hands of a Receiver—in New York of Delmonicos, as a result of the losses suffered through the war? Matters profiteering must be regulated with a different hand out yonder than in this little London of ours. They want a few of our bloated rampers of the officers of the R.A.F. and all other units (not forgetting the general public) to show them the pace. The only Receiver *then* required would probably be the representative of the Excess Profits Johnnie.

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THE suicide last week of Percy Luck, aged 36, is another very striking testimonial to the "efficiency" of Mill Hil Medical Board. What a commentary upon the possibilities! of the misapplication of man power when you get soulless experts at work!

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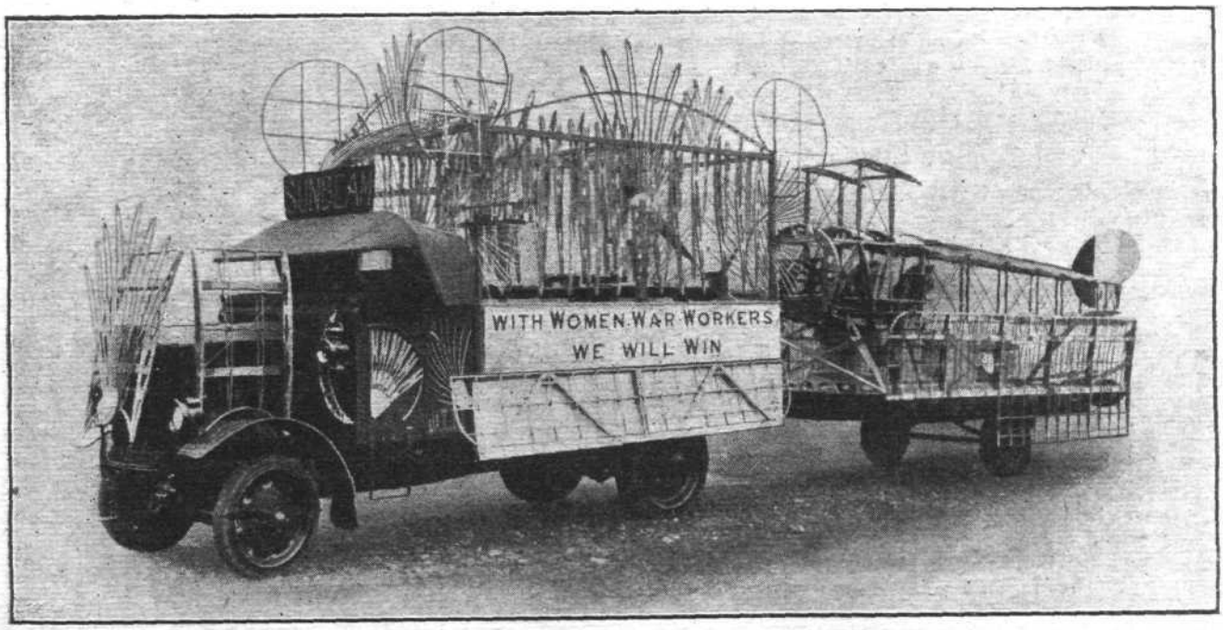
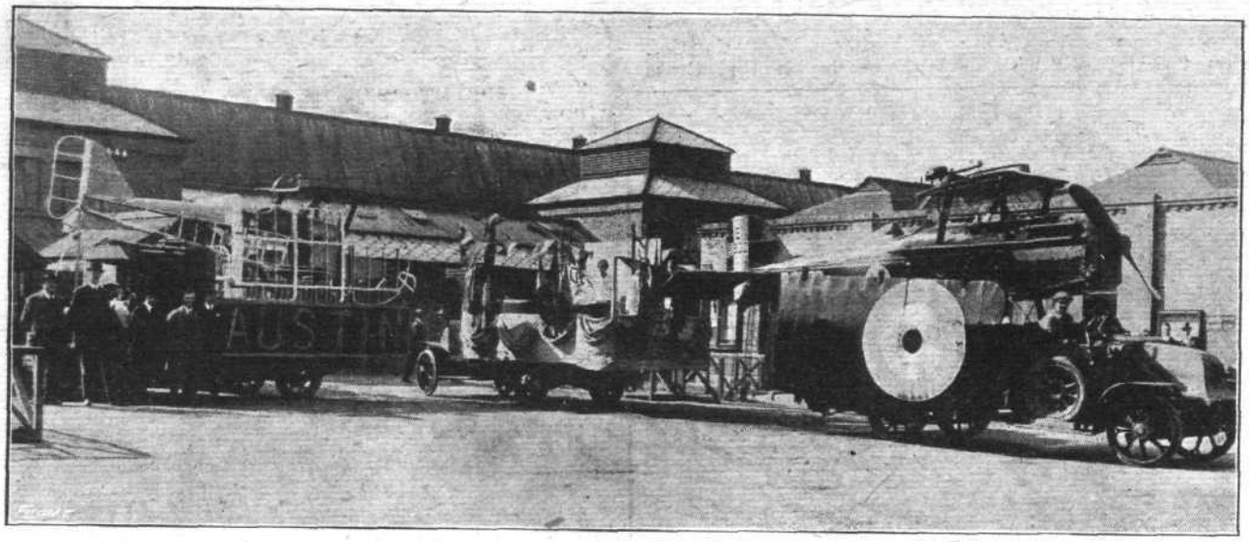
PRECEPTS FOR PENGUINS.

By One of the W.R.A.F.

1. Thou shalt have no dealings with Cadets! Thou shalt not give them the "glad eye"; nor seek to attract



WOMEN'S AIRCRAFT WORK IN THE WAR.—The above is the decorated lorry contributed by the Sunbeam Motor Car Co., Ltd., to "Our Day" Pageant at Wolverhampton. It illustrates the work of one of the women's departments, and bears, on the side not shown, the legend: "WOMEN'S WAR WORK GIVES BRITAIN WINGS."



The aeroplane exhibit of the Austin Motor Co., Ltd., which took part in the recent "Birmingham Win-the-War Day" procession, showing aeroplanes at different stages in their manufacture.

them with thy smiles—lest thou be called "flighty"—always remembering that thou art a Penguin and canst not fly.

2. Thou shalt not try to find favour in the eyes of any man by offering unto him a "second helping," for I say unto you: "He that can eat a 'second helping' in these days loveth dearly his 'Little Mary,' and can have no love for another."

3. Thou shalt not exceed thy rations, for sufficient unto the day is the food thereof as allowed by the good Lord Rhondda; and shouldst thou eat more than thy allotted share, then surely someone shall receive short measure!

4. Thou shalt not smash the crockery, but walk warily and watch thy step, lest thy foot slip, and in falling thou shouldst break 101 plates. If such misfortune should overtake thee, then shalt thou throw up thine arms, crying, "Oh Lord! oh, Lord! What have I done?"

5. Eight inches from the ground shalt thou wear thy frock—not more than these eight inches—nor shalt thou wear a lemon-coloured stocking, lest, perchance the Cadets should see a golden calf (a well-fatted one withal), and, like the Israelites of old, should fall down and worship it.

6. Thou shalt not wear a "trench coat," lest thou be taken for an officer, and thy comrades beholding thee should say: "Lo! Here is our officer." And they would give thee the salute, which would be a pity, for it would be wasted.

7. If thou shouldst meet a motor transport driver wearing the cloth of an officer, then shalt thou turn thine eyes away and give not the salute, for she is not an officer! (No, certainly not.)

8. Thou shalt not powder thy face! If thou wouldst secure unto thyself a husband, and one that is a soldier, I say unto thee, he that hath already "faced the powder" careth nought for the powdered face. It appeareth unto him even as a camouflage!

9. Thou shalt at all times wear thy uniform—the coat, the hat, the frock that has been given unto thee. Thou shalt not receive on Saturday morning a parcel bearing the legend "Laundry," which containeth not the snowy raiment, but, rather, a suit of blue serge, and a blouse that is of silk, to be donned secretly and at night when thou goest out to meet thy friends.

10. At the hour of nine-thirty shalt thou be in thy billet—not later than this. If, perchance, thy watch hath deceived thee, or the tram hath broken down, seek not to enter thy hostel with loud knocking on the door and ringing of bells; but, rather, get thee to the back of the house, where thou mayest enter by the scullery window—silently and without noise—having a care that thou disturbeth (?) not the slumbers of those that are within. Then "all shall be well with thee."

11. At least once a month shalt thou have thy photograph taken (by Breach or another) that thou mayest send it to thy relatives and friends in the north, the south, the east, and the west, that they may behold thee in thy uniform, and say unto the neighbours: "See! This is my daughter, and she is a Penguin!"

12. And when it shall come to pass that the war shall be over, thou canst return to thy home, feeling proud that thou hast done "thy bit" for King and Country, for in ministering to the needs of these Cadets thou hast helped in a measure to bring about the end of the Great War. Wherefore, go thy way and dwell in peace. Thou hast done well, my child! Thou hast done well!—*Roosters and Fledglings.*

* * *

THIS vivid little impression is taken from the diary of Charles Nungesser, who now stands second among French aces, having recently brought down his 39th Boche:—

"I brought my first machine down on the 28th of November, 1915. I was on a trial flight, having just received a new machine-gun, which I wanted to test. Near Nomeny I was drifting casually along at about 2,500 metres thinking of nothing in particular, when I saw two enemy machines. I dropped on them. One fled, the other turned to fight, and I opened fire 100 metres behind him. He flinched not, I missed him. Three bands of 47 cartridges each did I expend on that stolid one, who sits regarding me, his uptilted wings seeming to express amused toleration. At the end I have but one band left, in prudence I place myself so as to annihilate the *riposte*, less than 10 metres from my prey, and pivoting on one wing-tip, pour lead into him. He also fires with extreme abandon. I have but 24 cartridges left, I abandon the controls and aim with care: 'ta-ca-ta . . .' The German nose-dives, spins and founders. It is with difficulty that I avoid him in his fall. Evidently the pilot was killed, for the engine went roaring down, full on.

"The observer was unhurt, and he plunges, fully conscious, into the gulf yawning beneath his feet. Five hundred metres down the machine catches fire, and an instant after explodes, leaving but a scattering of debris and bones on the ground. . .

"One of my most disagreeable memories is the convulsed face of that observer whom a dead man drove to death."

It was for this fight that Nungesser received the Legion of Honour.

* * * *

Training the Young Idea.

MORE and more are our leading engineering firms realising the great advantage accruing from giving a sound technical education to those youths who are destined to follow the engineering profession. In this connection we are pleased to draw attention to an announcement elsewhere regarding a development of the educational scheme of the Austin Motor Co., Ltd. This firm is offering to train boys under actual factory conditions with the advantage of living in a college where studies will be supervised by qualified teachers. This is a scheme which should be of considerable interest to parents and headmasters, who can obtain full particulars from the Technical Director, Educational Department, Austin Motor Co., Ltd., Northfield, Birmingham.

Billiard Tables Wanted.

THE Office of Works appeals for secondhand billiard tables for the use during the coming winter months of R.A.F. officers who are stationed in outlying parts of the country. Between 70 and 80 tables are required. They must be full-sized and in good condition, and the Office of Works will pay reasonable prices for them. Those who are prepared to sell their billiard tables for such a purpose are asked to send particulars and the prices to the Office of Works as soon as possible.

FLIGHT

SOME AMERICAN HUMOUR.

By DOUGLAS W. THORBURN.

ONE only has to stroll into Claridge's or the Regent Palace, or talk to a German prisoner, to realise that the American Air Service has arrived. That is to say, some of it. And Gee!—as Clifford Prodger would remark—they are Some Boys, ber-lieve me! The only way to endure the horrors of this war is to extract from it as much humour as may be found. Our British Tommies have realised this from the very beginning, and now their American friends have come over evidently filled with the same determination. And when a bunch of husky American ginks start in to be funny—well, tear-gas hasn't a ghost of a chance.

In the last Christmas issue of "FLIGHT" I endeavoured, in response to an invitation, to dedicate a page or so by way of welcome to the aviators from the U.S.A. I have been repaid a hundred-fold. In fact, to be brief—for paper is scarce—I have become a regular reader of *157th Shrapnel*, a magazine published somewhere in England by the 157th Aero Squadron of the American Expeditionary Force. Nothing has given me such genuine delight since my grocer got black-listed by the local food committee for overcharging me for condensed milk.

The magazine is written obviously by the men of that squadron for their own edification, and doubtless to appreciate fully each point—and every issue is a veritable literary porcupine—one would have to know the men personally. As a matter of fact, after reading a few issues one begins to know them quite well, for the editorial contents are mainly of a most personal nature. I should like to give a few extracts.

Let me start with what I consider the real gem of the lot. I ought to keep it to the last, but really it can't wait. It is from a column of specially personal items:

"Talbot says there are only two things in this world that he hates, and Haynes' singing is both of 'em."

Surely nobody but an American would have thought of that. And here's another personal paragraph positively palpitating with pathos:

"Private Valcourt walked in his sleep one night and took his shirt off and threw it in the rain. Next morning he accused everyone in the shack of swiping his clothes. Is there no cure for this?"

The somewhat cosmopolitan nature of the force is indicated in the following libellous extract:

"The Swi s Yodellers Urell and Nilsson give nightly performances at the Mess Hall at 8.30. For close harmony these two lads get more out of a cup of soup than Gantert gets from his whole flute."

Of course there are poems—many of them. As might be expected, they defy description. The rhyming would scarcely pass the A.I.D., but the ideas at any rate are refreshing. My favourite is a twelve-verse account of a visit to London by Moynahan, who is one of the most irrepressible of the regular contributors. A few samples must suffice:

Last week we went to London Town, myself and Sergeant Streep,
And talk about excitement, boys, I'll say we had a heap.
We first hit King's Cross station and we took the Underground,
But soon discovered it was tough to find our way around.

So we came up to earth again and grabbed a flying 'bus—
Streep felt like he was in New York, you should have heard him cuss.
He lamped the Nelson Monument up in Trafalgar Square,
And we got off at Charing Cross, it was a two d. fare.

Next day we got up early—started in to see the City,
We saw where Hen. the Eighth killed all his wives, it was a pity.
The Traitor's Gate and Bloody Arch made Streep feel melancholy,
And then we saw the cell which once confined Sir Walter Raleigh.

* * * *

The streets were filled with officers of every Allied nation,
With every kind of uniform and every decoration.
And I saluted every one, but Streep does me one better—
The fish salutes a door-man out in front of a theatre.

* * * *

And now we're back in camp again, we're happy but we're broke.
Can't even get our laundry out of hock, and that's no joke.
We walk around the aerodrome and work and eat and sleep—
But we went big in London—don't believe me? Well, ask Streep.

There you have glimpses of the beginning and the end of a perfect day. To turn from the Poets' Corner to the Society Column, we get some excellent sidelights on the life of the camp from the domestic point of view. For instance:

"Private Yocom is to give a coming-out party in the near future, and Society in general is looking forward to this event with much anticipation. He will come out of the sleep he has been in since he joined in the war work. This will probably be the surprise America has promised for Germany."

And again:

"Private Wootton threw discretion to the winds a few days ago and bought himself one of those hair-cuts. He is now impersonating Hashimuru Togo, the Honest Jap Schoolboy."

There is a very touching Matrimonial Column, "Free Advice to the Love-Lorn, or Hart to Heart Talks by Murray Hart." It seems to indicate an amorous tendency on the part of the men of this squadron, to which the maidens of the nearest village appear to be most responsive. The answers, as this sample will show, are intended to be helpful:

"Dear Murray,

"Please advise me what to do about this matter. I met this girl about two weeks ago down by the canal. She has introduced me to her folks, and we had our picture taken together with my hand in hern. She has teeth and three dresses. She wants to go back to America with me, and her folks approve of it. As my wife is very sensitive I don't know what to do. Please advise.

(Signed) Grady Allgood."

"Well, that's pretty good, Grady. Find out if her folks have any money or a meat-card. If not, above all things don't argue with her. Push her in the canal."

Another correspondent has his troubles dealt with in another column devoted to miscellaneous enquiries:

"Dear Editor,—To-day by mistake I saluted an English Sergeant-Major. What can I do to redeem myself?

"(Signed) IMA Mutt."

Reply: "This is a common mistake. As the Sergeant-Major in the English Army has more power than both Houses of Parliament, the King, Scotland Yard and the Bricklayers' Union, you should congratulate yourself on your cunning."—[Ed.]

Here is a passing reference in an article by Brackett which will appeal to some of our own training squadrons:

"These De H. 6 joy-boats may look heavy and give the appearance of an ocean-greyhound on a mill-pond, but they're as safe as brass knuckles in a bird-cage, and why should a man loop the loop if he can't enjoy a sandwich when he comes down? . . . I hear that the Army has made plain, spoken, or in other words written or rotten an order that the poor suckers who raised their right hands and promised to go hungry for thirty-three per, can, after such and which date, no longer wear black, white or other shaped neck-ties. My think-box wanders back to that hell on earth in Texas where the poor rookie, just turned loose from the home corral, was told that he would be shot at sunrise if caught out of bed

without a neck-piece. Well, we can't crab at that—anything to end the war."

Here's a small chapter from "the Army Primer," by Fogarty, who manages happily to combine the true school-book style with some topical touches which probably brought him into contact with the camp ambulance, unless Fogarty is a heavy-weight champion :

"Oh, see the awkward squad! Is the awkward squad awkward? Yes, the awkward squad is very awkward. What makes the awkward squad so awkward? Arms, legs, and ears make them awkward. Will Woltag halt? No, Woltag will not halt—until later.

"Where is the mustache? What mustache? Lieut. Smith's mustache. Oh, did Lieut. Smith have a mustache? Yes, Lieut. Smith did have a mustache. Was it a nice mustache? Yes, it was a very nice mustache. Where did it go? The mustache has gone away to be trained.

"Oh, see the cook! Is Moravec a cook? No, he only thinks he is a cook. What is Moravec if not a cook? Moravec is an acetylene welder. What does Moravec weld? He welds rice and macaroni. Do the boys eat the rice? Yes, some of the boys eat the rice. Ross, Wadsey, Martin and Gantert are in the hospital."

There are many pithy paragraphs under the heading of "Philosophy," and this example seems to be unanswerable :

"A bird in the hand is worth two in the bush, but what would a man do with an ostrich?"

And again :

"The fountain of wisdom never runs dry, but there is a bunch of guys whose pipes are disconnected."

It is difficult to refrain from quoting whole issues of *Shrapnel*, as there are so many original and entertaining features, but let me conclude with two more samples of the humour of our Transatlantic friends, each of them in my opinion worth a whole coupon :

"Buckley : I told one of these English guys about a gink who worked in a bank and flew with the boodle, and he asked me if I was telling him an American joke. Can you beat it?"

"Davies (on the night of the air-raid) : I wish he'd run out of petrol."

"Rickman, (more practical) : I wish he'd run out of bombs."

The Army with a sense of humour will win this war, which is one great reason why the Huns will certainly be beaten. The members of the American Air Service have already contributed to the brighter side of it, as I always knew they would. There may be other magazines of a similar nature to *157th Shrapnel*, and if so I hope I may see them. Meanwhile, congratulations and best wishes to that squadron. They are real sportsmen, and deserve to do well when they get to the other side.

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PERSONALS.

Casualties.

2nd Lieut. REDMOND C. BROWNE, R.A.F., who was killed in action on September 28th, was the only son of Mr. and Mrs. C. R. Browne, 34, Langdon Park Road, Highgate.

2nd Lieut. ALFRED NEAL HYDE, R.A.F., who was killed in action on September 21st, aged 19, was the younger son of Mr. and Mrs. Tom Hyde, of Whalley Range, Manchester. He was educated at Gresham's School, Holt, Norfolk, and, on leaving school, he joined the R.F.C. as a Cadet in August, 1917, obtaining his pilot's wings in June, 1918. On July 27th last he went out to the front, where he was posted to a bombing squadron. He met his death during a raid over the enemy lines.

Lieut. E. C. H. R. NICHOLLS, Royal West Surrey R., attd. R.A.F., who was killed on active service on September 20th, aged 20, was the only son of Mr. and Mrs. E. F. Nicholls, of Weybourne, Woking. He was educated at Ripley Court, Surrey, Rugby (Mr. H. C. Bradby's house, 1912-15), and Sandhurst. He passed out from Sandhurst into the Royal West Surrey Regt. in July, 1916, but almost immediately was attached to the R.A.F. He started flying at Brooklands, and after about eight months at the front was severely wounded in an air fight near Ypres on May 1st, 1917. After convalescence he was employed at the Air Ministry until he started flying again last spring. He was in the Running VIII at Rugby.

Capt. LIONEL MOSTYN WOODHOUSE, M.C., D.F.C., R.A.F., who was killed in action on September 27th, aged 21, was the eldest son of Mr. and Mrs. Arthur Woodhouse, Tofts, Little Baddow, Essex.

Lieut. RONALD BAYNTON PICKEN, R.A.F., who was killed in action on September 6th, aged 19, was the elder son of Henry Moore Picken, J.P., of Beaumont, Pussellawal, Ceylon.

Capt. DAVID MCCONNELL KERR, R.A.F., who was lost at sea on October 4th through enemy action, aged 28, was the only son of the late David McConnell Kerr, of Jagersfontein, O.R.C., and Mrs. McConnell Kerr, "Coolarty," St. James, C.P., South Africa.

Lieut. HUMPHREY W. H. LUCAS, M.C., R.A.F., who was accidentally killed while flying on October 2nd, was the second son of Mrs. Lucas, The Grove, Coulsdon.

Capt. H. D. S. O'BRIEN, M.C., Northampton Regt., attached R.A.F., who has been accidentally killed in Mesopotamia, was the eldest son of Mrs. Lucius O'Brien, St. John's, Fahan, County Donegal.

Capt. HENRY PATCH, S. Lancs. Regt., attd. R.A.F., who has died of wounds received on or about October 18th, 1917, was the fifth son of the late Rev. H. Patch.

Married.

Flight-Cadet WILLIAM EMERY, R.A.F., eldest son of Mr. and Mrs. G. F. Emery, Wormley Lodge, Broxbourne, and grandson of the late Archdeacon Emery, The College, Ely, and of the late J. H. Taylor, Esq., M.A., Little Trinity, Cambridge, was married, on September 25th, at St. Augustine's Church, Broxbourne, to GRETA, youngest daughter of Mr. and Mrs. E. H. SPRING, Ribston Hall, Gloucester.

Sec. Lieut. A. E. GAME, London Regt., attd. R.A.F., was married, on September 30th, at Paddington, by special licence, to VIOLET LUCY EDITH, only daughter of Mrs. E. PECKHAM, of Bayswater.

Capt. LEONARD GRÆME MAXTON, R.A.F., only son of James Maxton, Belfast, was married, on October 1st, at St. Saviour's, Westgate-on-Sea, to RUBY BEATRICE, only daughter of DARTFORD HOLMES, Huddersfield, and only granddaughter of the late Henry J. Chapman and Mrs. Chapman, The Firs, Westgate-on-Sea.

Lieut. FRANCIS ARTHUR PRESCOTT, R.A.F., youngest son of Cyril A. Prescott, Esq., and Mrs. Prescott, of Highgate, was married, on October 2nd, at Amesbury Parish Church, to MARY TEMPE, elder daughter of ROBERT DUNLOP, District Inspector, Royal Irish Constabulary, and granddaughter of the late Col. S. Dunlop, R.A., C.M.G., 74, Cromwell Avenue, Highgate.

Lieut. FRANK SHINGLETON, R.A.F., second son of Mr. and Mrs. Shingleton, 67, Cornwall Gardens, S.W., was married, on September 28th, at St. Mary Abbots, Kensington, to LEONOR CHRISTIN, only daughter of Mr. and Mrs. BARCHARD, Northrepps, Norfolk.

To be Married.

The engagement is announced between Capt. E. R. M. GRIFFIN, R.A.F., eldest son of Lieut.-Col. E. M. Griffin, Bournemouth, and EILEEN CICELY, eldest daughter of Capt. Mrs. J. H. MANDER, Thorpe St. Andrew, Norwich, and granddaughter of the late J. P. A. Lloyd-Philipps, of Dale Castle, Pembrokeshire, and Mabws, Cardiganshire.

Items.

Col. and Alderman Sir CHARLES CHEERS WAKEFIELD has been selected as Renter Warden of the Company of Spectacle-makers for the ensuing year.

The will of Lieut. FRANCIS LEOPOLD MOND, R.F.A. and R.A.F., killed in action, the eldest son of Mr. Emile S. Mond, and nephew of Sir Alfred Mond, has been proved at £2,269.

FLIGHT

THE ROYAL AIR FORCE

London Gazette, October 1st.

The following temporary appointments are made at the Air Ministry :—

Deputy Director.—Lieut.-Col. (Temp. Col.) R. J. Armes, and to retain his temp. rank whilst so employed ; Aug. 22nd.

Staff Officer, 1st Class.—Col. R. W. Glennie, C.M.G. ; Aug. 15th.

The following temporary appointments are made :—

Staff Officer, 1st Class.—Lieut.-Col. F. H. Cleaver, D.S.O. ; June 18th.

Staff Officer, 2nd Class.—(P.) J. S. Ruttle (Lieut., actg. Capt., attd. E. Kent R.) is granted a temp. commn. as Lieut., and to be Temp. Maj. whilst so empld. ; July 6th.

Staff Officers, 3rd Class.—And to be Temp. Capts. whilst so employed, if not already holding that rank :—(P.) Capt. P. P. C. Penberthy ; July 15th. Sec. Lieut. (Temp. Capt.) F. Waldron ; June 14th to July 15th. (Q.) Lieut. G. S. Steel ; June 24th.

Staff Officer, 4th Class (1st Grade).—Sec. Lieut. B. Rooke-Cowell, and to be Temp. Capt. whilst so employed ; Sept. 9th.

Flying Branch.

Capt. J. G. Struthers, D.S.C., to be Temp. Maj. whilst empld. as Maj. (Dir.) ; Sept. 19th. Lieut. G. F. Knight to be Temp. Capt. whilst empld. as Capt. (A.) ; Aug. 1st, with seniority from Aug. 1st, 1917 (substituted for notification in the *Gazette*, Aug. 16th). Lieuts. to be Temp. Capts. whilst employed as Capts. A.) :—L. D. Brown, E. F. Haylock ; Aug. 1st. J. V. Turner ; Aug. 9th. R. D. Best, P. H. Davy, S. D. Withers ; Sept. 1st. J. E. H. Dakin, P. M. McSwiny ; Sept. 16th. N. B. Scott, M. G. W. Stewart, G. J. Strange ; Sept. 17th. F. T. Woods ; Sept. 19th. G. J. Farmer ; Sept. 22nd. Lieuts. (O.) to be Lieuts. (A.) :—H. Entwistle ; Aug. 24th. E. G. Williams ; Sept. 12th. (Hon. Capt.) L. Laing, and to be Hon. Capt. ; Sept. 13th. Sec. Lieuts. (late Gen. List, R.F.C., on prob.) confirmed in their rank as Sec. Lieuts. (A.) :—H. J. Boyle ; May 1st. E. G. Corey ; July 7th. A. D. Patton ; July 8th. G. P. McCraig ; July 11th. A. W. Johnston ; July 13th. W. Shackleton ; Sept. 6th. G. Dignam ; Sept. 9th. J. E. Gordon, W. S. Brooks, E. G. Simpson ; Sept. 10th. A. Champ, H. G. Daulton, A. A. Swait, L. V. West, F. F. J. Wise, E. H. Smy, P. G. Greenwood, L. C. Taylor ; Sept. 11th. H. N. Tiplady ; Sept. 12th. G. C. Gage, H. Walmsley (date of first commn. March 9th), K. H. Paine, J. W. Wilson, G. A. Thompson (date of first commn. March 23rd), R. T. Thacker, G. M. Gossage, E. J. Bannister ; Sept. 13th. J. M. Porteous ; Sept. 14th. R. E. Baty, M.C. (Temp. Lieut., North'd. Fus.), is granted a temp. commn. as Sec. Lieut. (A.), and to be Hon. Lieut. ; May 2nd (substituted for notification in *Gazette*, May 31st, p. 6385).

The following are granted temp. commns. as Sec. Lieuts. (A.) :—S. J. E. Callcott (Temp. Sec. Lieut., attd. Yorks L.I.) ; R. K. Wilson (Sec. Lieut., North'd Fus., T.F.) ; Aug. 31st. D. M. Nichols (late R.N.A.S.) ; Sept. 7th. H. A. L. Pattison (Temp. Lieut., Bedf. R.) and to be Hon. Lieut. ; Sept. 10th. G. H. L. Easterbrook (Lieut., Devon R., T.F.), and to be Hon. Lieut. ; R. L. Hall (Lieut., A.S.C., T.F.), and to be Hon. Lieut. ; H. J. Bristoll (Sec. Lieut., Lan. Fus. T.F.) ; Sept. 11th. G. W. Duggan (Lieut., Fort Garry Horse, C.E.F.), and to be Hon. Lieut. J. I. E. S. Wright (Sec. Lieut., Lond. R., T.F.) ; Sept. 12th. W. S. Ross (Lieut., Sco. Rif., T.F.), and to be Hon. Lieut. ; J. Cave (Lieut., Manitoba R., C.E.F.), and to be Hon. Lieut. ; Sept. 13th. C. T. Wakeford (Lieut., S.A. Forces), and to be Hon. Lieut. ; N. E. Latham, H. Mitchell ; Sept. 30th. Prob. Flt. Offs. (late R.N.A.S., granted temp. commns. as Sec. Lieuts. (A.) :—G. W. Cochrane ; May 7th. H. D. Lackey ; June 14th. V. E. Jackson ; June 15th. P. Girvin ; Sept. 11th. R. G. Alderson ; Sept. 12th. Flt. Cdts. granted temp. commns. as Sec. Lieuts. (A.) :—E. L. Howells ; Aug. 7th. J. F. Starkey, W. R. Stewart ; Sept. 16th. W. H. Perks, E. T. Brownscombe, H. O. Williams, C. L. Gall, W. J. Sanderson ; Sept. 17th. S. C. Black, J. W. Brown ; Sept. 18th. P. H. Jenner, A. K. Doull ; Sept. 20th. Cdts. granted temp. commns. as Sec. Lieuts. (A.) :—F. I. Banghart, R. Barrett, J. C. Bell, W. M. Bergey, M. Bonser, G. E. Bradley, C. G. Brennand, A. Brown, J. H. Cairns, H. F. Conroy, H. E. Davis, A. H. Dubois, S. E. Edwards, R. H. Ellis, P. Evans, J. D. Fitzsimmons, H. E. Foster, W. H. Grant, H. S. Haggerty, M. E. Hall, P. E. Hart, R. L. Hayden, H. H. Hewetson, I. W. Hoeffler, Æ. J. Kiely, F. L. Kirby, G. Le F. Lalonde, W. F. Langford, A. Le Gault, G. Lewis, H. C. G. Ligertwood, H. S. Littlejohn, R. G. Lockwood, C. W. Loucks, W. B. Mavity, A. J. McGoldrick, M. H. McRae, D. A. Morrow, V. P. Murphy, C. A. Muir, B. A. Noble, T. B. Patterson, A. A. Rolph, E. Z. Sexton, F. P. Shanahan, B. Solomon, H. T. W. Sutherland, H. Tornquist, J. W. Weir, H. L. Turner, W. E. White, J. F. Wilcox ; Sept. 5th. Flight Cadets granted temp. commns. as Sec. Lieuts. (A. and S.) :—J. H. Chambers ; May 1st. J. D. Allen, E. C. Archer, F. T. Chouler, F. St. L. Devenish, G. R. Duthie, R. R. G. Duthie, J. C. Elsworth, E. D. Fenn, D. L. Nicholas, J. S. Shannon, E. E. Smith, C. J. S. Tainton, H. H. Thesen, R. J. Tilney, G. Vaughan, L. M. Williams ; July 20th. W. G. Harris ; Aug. 30th. G. H. Weir ; Sept. 6th. K. L. Graham ; Sept. 17th. J. C. Kyle ; Sept. 18th. Lieut. C. A. McConchie to be Sec. Lieut. (Dir.) and to be Hon. Lieut., from (Obs. Officer) ; Sept. 5th. Sec. Lieut. T. O. Oakes to be Sec. Lieut. (Dir.) from (T.) ; Sept. 5th. Prob. Flight Officer P. H. D. Blackman (late R.N.A.S.) is granted a temp. commn. as Sec. Lieut. (Dir.) ; Sept. 9th. The following are granted temp. commns. as Sec. Lieuts. (Dir.) :—W. Phillip (Sec. Lieut., L'pool. R., T.F.), F. C. Rayson (Temp. Sec. Lieut., attd. R. Fus.), C. A. Roxburgh (Temp. Sec. Lieut., attd. Glouc. R.), F. W. Turner (Temp. Sec. Lieut., attd. Rif. Brig.), H. S. Manterfield (Temp. Sec. Lieut., attd. Oxf. and Bucks L.I.), W. P. Watts (Temp. Sec. Lieut., attd. Duke of Corn. L.I.), J. E. Warner (Temp. Sec. Lieut., attd. Norf. R.), E. Purton (Sec. Lieut., London R., T.F.), G. W. W. Walpole (Temp. Sec. Lieut., attd. North'd Fus.) ; June 24th. W. G. Olding (Temp. Sec. Lieut., attd. Duke of Corn. L.I.) ; July 31st. Flight Cadets granted temp. commns. as Sec. Lieuts. (Dir.) :—T. B. Shepherd, C. E. Moore, B. O. Bracey, J. H. Wharmby, H. N. Nicholls, H. F. B. Duval-Symington, S. A. Gluning, H. Cameron, F. Wight, H. W. Jeffreys, H. R. Young, H. T. Jackman, J. O. Huddart, S. P. Powell, R. S. Simpson, F. C. Goddard, W. Barnes, W. Bellingham, H. Firstbrook, H. Fox, G. Westcott ; July 17th. E. T. Adams ; Aug. 1st. J. Sproston ; Aug. 23rd. R. H. Berryman, C. B. Creasey, E. Ireland, J. W. Cruickshank, J. E. C. Hornsby, D. F. Barber ; Aug. 28th. A. R. Purchase, B. H. Filkins, T. Lamb, F. W. Davis, G. W. Booth ; Sept. 4th. The following are granted temp. commns. as Sec. Lieuts. (K.B.) :—L. C. Pierce (Lieut., R.F.A., T.F.), and to be Hon. Lieut., G. Holland (Sec. Lieut., R.F.A., Spec. Res.) ; Aug. 24th. H. A. Ball, M.M. (Sec. Lieut., R.F.A.), W. H. Shrimpton (Sec. Lieut., R.F.A., Spec. Res.) ; Sept. 8th. Sec. Lieuts. (late Gen. List, R.F.C., on prob.) confirmed in their rank as Sec. Lieuts. (Obs. Offrs.) :—G. W. H. Parlee ; July 14th. J. Millar ; Aug. 16th. B. Garrett, T. A. Evans, A. H. McIntyre ; Sept. 21st. R. D. C. Vincent ; Sept. 22nd. The following are granted temp. commns. as Sec. Lieuts. (Obs. Offrs.) :—F. C. Dixon (Lieut., Manch. R., T.F.), and to be Hon. Lieut. ; April 1st. F. H. Webb (Temp. Lieut., R. War. R.), and to be Hon. Lieut. ; May 18th. J. J. Fenwick (Temp. Lieut., attd. R. Scots), and to be Hon. Lieut. ; June 8th (substituted for notification in *Gazette* of June 14th. A. G. MacGowan, Temp. Lieut., Gen. List, New Armies), and to be Hon. Lieut. ; July 6th (substituted for notification in *Gazette* of Aug. 20th, p. 9705) W. W. E. Clarke (Temp. Lieut., attd. Lan. Fus.), and to be Hon. Lieut. ; July 17th. (Subtsituted for notification in the *Gazette* of Aug. 23rd, p. 9,831). E. L. Chafe (Temp. Sec. Lieut., Rif. Bde.), R. H. St Amory (Temp. Sec. Lieut., A.S.C.), J. W. Firth (Temp. Lieut., Durh. L.I.) and to be Hon. Lieut., M. W. Clark (Temp. Lieut., Bedf. R.), and to be Hon. Lieut. ; Sept. 12th. W. J. Goddard (Temp. Sec. Lieut., R.W. Kent R.); Sept. 13th (Sept. 9th). W. G. Walford (Temp. Capt., R.E., Spec. Res.), and to be Hon. Capt., A. McBride (Lieut., W. Ontario R., C.E.F.), and to be Hon Lieut., R. E. Carles, M.C. (Temp. Lieut., Bedf. R.), and to be Hon. Lieut., L. H. Burrows (Temp. Sec. Lieut., Manch. R.), J. G. M'Bride (Temp. Sec. Lieut. Glouc. R.), J. C. Kidd (Temp. Sec. Lieut., K.R.R.C.), S. P. B. De Moyse-Bucknall (Temp. Lieut., attd. R. Fus.), and to be Hon. Lieut. ; Sept. 16th, H. Dinwoodie, M.C. (Lieut., Dorset R., Spec. Res.), and to be Hon. Lieut., M. G. Robson, M.C. (Temp. Lieut., York R.), and to be Hon. Lieut., P. Sherek (Temp. Lieut., N. Staff. R.), and to be Hon. Lieut., A. D. Sinclair (Sec. Lieut., High. L.I., T.F.) ; Sept. 19th. W. C. Treen, M.C., D.C.M. (Sec. Lieut., R.F.A., Spec. Res.) ; Sept. 21st. A. P. Roberts (Sec. Lieut., Dorset R., Spec. Res.) ; Sept. 27th. A. Bairstow (Temp. Sec. Lieut., W. York R.) ; Sept. 28th. The following Prob. Obs. Officers (late R.N.A.S.) are granted temp. commns. as Sec Lieuts. (Obs. Officers) :—V. O'Neill ; Sept. 11th. A. H. Fitton ; Sept. 20th The following Flight Cdts. are granted temp. commns. as Sec. Lieuts. (Obs. Officers) :—J. H. Taylor ; May 25th. A. W. Higgett, H. N. Bostock, W. C. Parry, C. F. Gates, A. W. Chamberlain, R. O. Hughes, C. S. Trapp, N. M. Simpson, A. G. Nicholls, J. R. Smith, F. J. Fawcett, J. E. West, J. W. Davies, F. C. Marwood ; Sept. 20th. A. D. Clarke, S. H. Clemence, G. Cockburn, T. M. Baker, A. R. Bennet ; Sept. 21st. D. Macrae, L. Edwards, J. Collins, G. Williams, E. F. Pittaway ; Sept. 24th. E. S. Ferguson, H. R. Hopkins, A. H. Taylor, A. R. Miles, F. T. Boland ; Sept. 27th. E. Cuthbert, H. Chappells. G. O. Parker, A. Talbot, W. Dalgleish, H. T. Ecob, E. Hughes, H. W. Mitchell, A. B. Morris, H. Green, J. Hunt, F. W. Pike, J. R. Welsford, J. W. Palmer, H. T. Martin, F. C. Young ; Sept. 28th. W. K. Young (late R.N.A.S.) is granted a temp. commn. as Sec. Lieut. (S.) ; Sept. 13th. Flt. Cadet N. P Field is granted a temp. commn. as Sec. Lieut. (S.) ; Sept. 19th. The following relinquish their commns on ceasing to be employed :—Lieut. (Hon. Capt.) H C. Brocklehurst, Capt. Hus. ; Sept. 1st. Lieut. (Hon. Capt.) J. A. Le Royer M.C. (Capt., Que. R., C.E.F.) ; Sept. 9th. Lieut. A. C. Watt (Lieut., Gord Highrs.) ; Sept. 23rd. Maj. F. G. Brodribb (Lieut., R.N.) ; Sept. 26th. Capt. E. G. F. Thompson relinquishes his commn. on account of ill-health, and is granted the hon. rank of Capt. ; July 24th. Capt. K. C. McCallum, M.C. (Capt., A. and S. Highrs.), relinquishes his commn. on account of ill-health caused by wounds ; Oct. 2nd. Lieut. J. L. Dickson (Lieut., Can. Local Forces) relinquishes his commn. on account of ill-health contracted on active service ; Oct. 2nd. Lieut. F. D. Howitt resigns his commn. to resume his medical studies, and is granted the hon. rank of Lieut ; Oct. 2nd. Lieut. H. P. Robotham (Glouc. R., S.R.) relinquishes his commn. on account of ill-health ; Oct. 2nd. Lieut. R. E. Sproule resigns his commn., and is granted the hon. rank of Lieut. ; Oct. 2nd. Sec. Lieut. B. B. Sampson relinquishes his commn. on account of ill-health, and is granted the hon. rank of Sec. Lieut. ; Oct. 2nd. Lieut. J. E. Faid resigns his commn., having been found permanently unfit for further instruction as Pilot or Observer ; Oct. 2nd. The following Sec. Lieuts. resign their commns., having been foun permanently unfit for further instruction as Pilots or Observers :—A. R. Hungerford, J. Lindsay, G. G. Luffman, C. Peacock, N. Selby ; Oct. 2nd. The date of appointment of Lieut. G. F. Ward as Temp. Capt. (A.) is Aug. 29th, and not as stated in the *Gazette* of Sept. 24th The initials of F. V. Preston (W. York. R., T.F.) are as now described, and not as in the *Gazette* of June 4 , p. 6,591. The Christian name of P. F. O. Wallace Kirkpatrick-Crockett (lat R.N.A.S.) is as now described, and not as in the *Gazette* of Sept. 10th. The surname of P. F. O. René Michael Mulvihill (late R.N.A.S.) is as now described, and not as in the *Gazette* of Sept. 13th, p. 10,787 The notification in the *Gazette* of June 11th concerning G. M. Roberts is cancelled. Notifications in the *Gazette* of July 5th concerning the following are cancelled :—Sec. Lieut. H R. Watterson, Lieut. E. Nordberg. Notification in the *Gazette* of July 12th concerning P.F.O. R. H. S. Calver (late R.N.A.S.) is cancelled. Notification in the *Gazette* of July 16th, p. 8,340, concerning Sec. Lieut. F. H. Webb (R. War. R.) is cancelled. Notifications in the *Gazette* of July 19th concerning the following Sec. Lieuts. are cancelled :—H. S. Gros, A. W. Beamand. Notification in the *Gazette* of July 26th concerning A. L. Coulson is cancelled. Notifications in the *Gazette* of Aug. 20th concerning the following Sec. Lieuts. are cancelled :—G. W. Parlee, E. I. Riley, J. A. Matthews, J. T. Menzies, H. Walker. Notifications in the *Gazette* of Sept. 6th conecrning the following Sec. Lieuts. are cancelled :—P. J. A. Fleming, T. R. Hatton, G. F. Lane, P. King, W. F. Maker (p. 10552). Notifications in the *Gazette* of Sept. 10th concerning the following Sec. Lieuts. are cancelled :—C. S. W. Hall, J. Miller, C. R. Goss. Notifications in the *Gazette* of Sept. 17th concerning the following Sec. Lieuts. are cancelled :—H. Entwistle, A. E. Watson. Notification in the *Gazette* of Sept. 20th concerning Flt. Cdt. F. R. L. Allan is cancelled.

Administrative Branch.

The following Capts. (R.D.C., T.F.) are granted temp. commns. as Majs. (substituted for notification in *Gazette* of Sept. 17th, p. 11099) :—G. C. Tosswill, E. M. B. H. Gyll-Murray ; July 2nd. Majs. to be Majs. :—W. J. Shields, from (T.), G. L. Wightman, from (T.) ; Sept. 20th. M. E. Lane, from (A.) ; Sept. 27th. Sec. Lieut. (Temp. Capt.) L. J. Grant to be Temp. Maj. while employed as Maj. ; July 26th. The following are granted temp. commns. as Capts. :—R. A. Laws (Lieut., R.N.V.R.), H. S. Parsons (Capt., 58th Bn., C.E.F.) ; June 1st. Lieuts. (R.D.C., T.F.) granted temp. commns. as Capts. (substituted for notification in *Gazette* of Sept. 17th, p. 11099) :—W. Ricketts, C. F. Newington, E. G. Simpson, H. F. Roberts, J. R. M. Tweddell, J. R. Fox, F. Barclay ; July 2nd. Sec Lieuts. to be Temp. Capts. while employed as Capts. :—(Hon. Lieut.) E. Meynell, D.C.M. (T.) ; Aug. 16th. (Temp. Lieut.) G. T. Bridgewater ; Sept. 21st. Lieut. A. W. R. Matthews to be Temp. Capt. (without pay and allowances of that rank) while employed as Capt. ; Oct. 2nd. The following Sec. Lieuts. (R.D.C., T.F.) are granted temp. commns. as Lieuts. (substituted for notification in *Gazette* Sept. 17th, p. 11099 :—C. Ridsdale, P. C. Ward ; July 2nd. The following are granted temp. commns. as Lieuts. :—T. M. Winch (Lieut., T.F. Res.) ; July 4th. S. H. H. Heaver (Lieut., Ches. R.) ; Sept. 14th. W. J. Hatcher (Temp. Lieut., R. Fus.), E. H. Mayers (D. of Corn. L.I.) ; Sept. 19th. Lieuts. (A.) to be Lieuts. :—W. R. Exley ; Aug. 29th. F. J. Kayser, S. R. L. Poole, A. L. Stirk ; Sept. 7th. R. G. Young ; Sept. 19th. E. H. Dimmock, G. C. Hughes ; Sept. 21st. C. L. White ; Sept. 23rd. Lieuts. (O.) to be Lieuts. :—T. A. W. Foy ; Sept. 7th. B. Mason ; Sept. 19th. M. Walker ; Sept. 21st. Sec. Lieuts. to be Temp. Lieuts. whilst employed as Lieuts. :—(Hon. Lieut.) H. L. Marston ; July 24th. J. H. Wright (Sept. 13th). J. S. Archer (late Qr.-Mr. and Hon. Lieut., R.D.C., T.F.) is granted a temp. commn. as Sec. Lieut., and to be Temp. Lieut whilst specially employed ; Sept. 30th. The following

are granted temp. commissions as Sec. Lieuts. :—A. R. Barnes (Hon. Lieut., late Border R.) and to be Hon. Lieut.; Sept. 29th. R. Falcon-Cooke (Hon. Capt., Border R.) and to be Hon. Capt.; T. W. Walker (late T. Lieut., Gen. List) and to be Hon. Lieut.; B. Berry, W. J. Brown, P. Christopherson, F. G. Corbett, J. M. England, G. A. F. Gibson, H. Gould, A. J. Hall, G. W. Heugh, S. H. Horler, J. Ireland-Low, L. de B. Lewis, C. F. Nurse, P. O. Patterson, S. E. Penton, N. R. Rice, S. M. Stringfield (Prob. Flt. Offr., late R.N.A.S.), A. R Tarte, G. W. Thomason, E. C. G. Vines (Prob. Flt. Offr., late R.N.A.S.), F. P. Ward, A. Worthington, W. J. Yeldham; Sept. 30th. O. P. Aarvold; Oct. 1st. Lieut. (Hon. Maj.) R. L. C. Brooker relinquishes his commn. on ceasing to be employed; Oct. 2nd. Sec. Lieut. A. J. Howard relinquishes his commn. on account of ill-health caused by wounds, and is granted the hon. rank of Sec. Lieut.; Aug. 24th. Following Lieuts. relinquish their commns. on account of ill-health contracted on active service, and are granted the hon. rank of Lieut. :—R. E. Calais-de-Pury, L. E. Pulford; Oct. 2nd. Lieut. J. H. Turnbull (Lieut., Linc. R.) relinquishes his commn. on account of ill-health caused by wounds contracted on active service; Oct. 2nd. Sec. Lieut. J. Johnston relinquishes his commn. on account of ill-health and is granted the hon. rank of Sec. Lieut.; Oct. 2nd; Sec. Lieut. A. M. Langdale relinquishes his commn. on account of ill-health contracted on active service, and is granted the hon. rank of Sec. Lieut.; Oct. 2nd. The following Sec. Lieuts. resign their commns. C. De Vitalis, D. Macbeth, W. A. Smith, H. Wheat, C. S. Williams; Oct. 2nd. The date of the appointment of Sec. Lieut. (Hon. Lieut.) S. Warring as Capt. is May 30th, and not as stated in *Gazette* Aug. 23rd. The date of the appointment of Hon. Lieut. I. A. N. Beadle is Aug. 8th, and not as stated in *Gazette* of Sept. 20th. The date of appointment of Sec. Lieut. E. Blake is Aug. 14th, and not as stated in *Gazette* of Sept. 20th. The initials of Sec. Lieut. G. H. Malone are as now described, and not as stated in *Gazette* Sept. 20th. The notification on p. 6804 of *Gazette*, June 4th, concerning Sec. Lieut. (Temp. Capt.) S. Morris is cancelled.

Technical Branch.

Lieut.-Col. (now temp. Col.) L. F. Blandy, D.S.O., to be Lieut.-Col. (Class A), and to be Temp. Col. while so employed; April 18th. Maj. F. A. G. Noel to be Temp. Lieut.-Col. while employed as Lieut.-Col.; May 28th. (Substituted for notification in *Gazette* Sept. 10th). Capt. (Temp. Maj.) O. Lindquist to be Temp. Lieut.-Col. while employed as Lieut.-Col.; Sept. 12th. Capts. to be Temp. Majs. while employed as Majs :—A. M. Lester; July 23rd. (Substituted for notification in *Gazette* Aug. 27th): F. B. Pulham; Aug. 19th. Maj. J. W. K. Allsop to be Maj. from (S.O.); Aug. 29th. W. A. Ogden (Lieut., R.N.V.R.) is granted a temp. commn. as Capt.; Aug. 15th, seniority April 1st. Capt. E. V. King-Hall to be Capt., from (S.O.); Sept. 30th. Lieut. A. Charig to be Lieut. from (Ad.); April 1st. Sec. Lieuts. to be Temp. Lieuts. while employed as Lieuts. :—F. A. Beale, N. Hemsley, W. Searle; May 1st. (Hon. Lieut.) N. W. Burkett, (Hon. Lieut.) C. D. Jackman; Aug. 30th. L. Burgoine, D. W. Dean, from (Ad.), F. G. Eckford; Sept. 1st. E. Taylor; Sept. 18th. C. A. S. Brittenden (Sec. Lieut., late Gen List, R.F.C., on prob.) is confirmed in his rank as Sec. Lieut.; July 8th. Sec. Lieuts. (Ad.) to be Sec. Lieuts. :—E. L. Hopkins; Sept. 6th. F. N. Gooding; Sept. 11th. W. Seed (date of first commn. May 22nd); Sept. 14th. J. S. Burt; Sept. 16th. Lieut. A. H. Fancis to be Sec. Lieut. (Hon. Lieut.) from (Admin.); Sept. 10th. The following are granted temp. commns. as Sec. Lieuts. :—F. J. Magee (Asst. Paymr., R.N.V.R.), and to be Hon. Lieut.; Sept. 16th. E. P. Bennett, S. Freeman, S. Jupp, J. O. Pakemann, C. L. Peppiatt, H. S. Wood; Sept. 30th. Sec. Lieut. J. Tyler resigns his commn.; Oct. 2nd. The notification on page 8,629 of the *Gazette* of July 23rd, concerning Lieut. E. G. Thompson is cancelled.

Medical Branch.

The following are granted temp. commns. as Capts. :—H. P. Helsham (Capt., R.A.M.C.), B. H. Swift, M. E. H. Wale; Sept. 30th. The undermentioned are granted temp. commns. as Lieuts. :—E. E. Rollins; Sept. 27th. A. E. Collie; Sept. 28th.

Dental Branch.

The following are granted temp. commns. as Lieuts. :—H. H. Chapman, G. H. W. Randell; Sept. 30th.

Memoranda.

Hon. Lieut. H. Longton to be Hon. Capt. whilst emlpoyed as Asst. Inspector, A.I.D.; Oct. 2nd. Capt. (Temp. Maj.) E. H. Cockburn relinquishes his Staff appointment at the Air Ministry; Sept. 9th. The following are granted the hon. rank of Lieut. :—L. H. Patterson (late Lieut., R.A.F.); Aug. 7th. P. E. Jeficock, late Sec. Lieut. (Hon. Lieut.) (R.A.F.); Sept. 11th. Capt. C. M. Crowe to take rank and precedence as if his appointment as Capt. bore date Aug. 10th.

London Gazette, October 4th.

The following temporary appointment is made at the Air Ministry :—

Staff Officer, 2nd Class.—Capt. N. D. Newall, and to be Temp. Maj. while so employed; June 28th.

The following temporary appointments are made :—

Staff Officers, 1st Class.—And to be Temp. Lieut.-Cols. while so employed :—Capt. (Temp. Maj.) T. M. Eggar; Sept. 14th. (P.)—J. S. T. Bradley (Capt., M.G.C.), and is granted a temp. commn. as Capt.; Aug. 1st.

Staff Officers, 2nd Class.—And to be Temp. Majs. while so employed., if not already holding that rank :—(Air)—Maj. Hon. M. Baring, O.B.E.; May 10th. (T.)—Capt. F. P. Don; Aug. 1st.

Staff Officers, 3rd Class.—Lieut. (Temp. Capt.) V. Stranders, and to retain his temp. rank while so employed, vice Capt. A. E. Hartley; April 24th. (P.)—Capt. E. J. Needham; Aug. 1st.

Staff Officer, 4th Class (1st Grade).—Capt. L. P. D. Cooper: Aug. 2 1st.

Staff Officers, 4th Class (2nd Grade).—Capt. H. W. J. Chipchase, Capt. W. J. Coombes, Capt. A. J. Woodhouse; Aug. 21st. Lieut. (Temp. Capt.) T. Smith; Sept. 18th.

Flying Branch.

Maj. F. W. K. Davies, from (T.), to be Capt. (A.) and to be Hon. Maj.; May 11th.

Lieuts. to be Temp. Capts. while employed as Capts. (A.) :—J. W. Beebee; Aug. 25th. H. Sanders; Sept. 17th. R. Grice; Sept. 21st. A. C. Kiddie, H. A. White; Sept. 23rd. W. Ledlie; Sept. 28th.

Capt. W. H. Chisman to be Capt. (A.); Sept. 18th.

Lieut. (Hon. Capt.) S. J. Woolley to be Temp. Capt. while employed as Capt. A. and S.); May 1st.

Capt. T. C. Lloyd to be Capt. (K.B.); Sept. 10th.

Lieut. H. Hadley to be Temp. Capt. while employed as Capt. (K.B.); Sept. 30th.

Capt. G. E. Wright to be Capt. (O.); Aug. 1st.

Sec. Lieut. (Hon. Lieut.) G. M. Dawson, M.C., to be Temp. Capt. while employed as Capt. (O.); Sept. 17th.

Capt. W. R. D. Acland to be Capt. (S.); Sept. 9th.

Lieut. H. E. Haslehurst to be Lieut. (A.), from (T.); Sept. 23rd.

Lieut. I. B. Wallas to be Lieut. (A.), from (Obs. Offr.); June 14th. (Substituted for notification in *Gazette*, July 19th.)

Lieut. M. F. R. Plowman to be Lieut. (Dir.), from (K.B.); July 17th. (Substituted for notification in *Gazette*, Sept. 10th.)

Lieut. J. G. Munro (late Gen. List, R.F.C., on prob.) is confirmed in his rank as Sec. Lieut. (A.), and to be Hon. Lieut.; May 10th.

The following Sec. Lieuts. (late Gen. List, R.F.C., on prob.) are confirmed in their rank as Sec. Lieuts. (A.) :—W. Howarth; May 14th. G. H. Bond; June 2nd.

Sec. Lieut. J. L. Colbourne (late Gen. List, R.F.C., on pro b.) is confirmed n his rank as Sec. Lieut. (A.); June 14th. (Substituted for not ification in *Gazette* July 19th.)

Sec. Lieut. P. V. Penhallvrick (late Gen. List, R.F.C., on prob.) is confirmed in h's rank as Sec. Lieut. (A.); June 14th. (Substituted for notification in *Gazette*, July 19th.)

Sec. Lieut. S. H. Potter (late Gen. List, R.F.C., on prob.) is confirmed in his rank as Sec. Lieut. (A.); July 30th. (Substituted for notification in *Gazette* Sept. 6th, concerning S. H. Porter.)

The following Flt. Cadets are granted temp. commns. as Sec. Lieuts. (A.) :—J. H. Lamb; July 15th. L. Arnold, A. Ussher; Sept. 19th. A. G. J. White house, E. W. Jordan, E. Archer; Sept. 20th. C. A. Giddings, W. F. Shaylor E. S. Scott, H. G. Mayhew, R. Pyper, W. O'Brien, D. Cryan; Sept. 21st. P. K Homer, B. A. Davy; Sept. 22nd.

Flt. Cdt. H. J. Smith is granted a temp. commn. as Sec. Lieut. (A.); June 14th (Substituted for notification in *Gazette* Sept. 20th.)

Cdt. B. J. Hill is granted a temp. commn. as Sec. Lieut. (A.); Aug. 10th.

Sec. Lieut. W. A. Russell, late Gen. List, R.F.C., on prob. (date of 1st commn March 24th) is confirmed in his rank as Sec. Lieut. (A. and S.); May 9th.

D. J. C. McCowan (Lieut., Sco. Rif., T.F.) is granted a temp. commn. as Sec. Lieut. (A. and S.), and to be Hon. Lieut.; July 31st.

The following Flt. Cdts. are granted temp. commns as Sec. Lieuts. (A. and S.) :—J. J. Melvill; Aug. 25th. A. Smith; Sept. 18th. H. S. Izzett; Sept. 20th. H. O. K. Ayling; Sept. 21st. A. Hart, C. J. A. Berkeley; Sept. 23rd.

Sec. Lieut. V. T. H. Ffrench (late Gen. List, R.F.C., on prob.) is confirmed in his rank as Sec. Lieut. (K.B.); Aug. 31st. (Substituted for notification in *Gazette*, Sept. 17th.)

The following Flight Cadets are granted temp, commns. as Sec. Lieuts. (Obs Offrs.) :—F. G. Smith, D. A. F. Vavasour, G. P. Woods, W. J. Large, J. H. McLellan, J. W. Morris; Sept. 13th. A. Iredale, C. E. Wainwright, E. A. Seal, C. E. J. Dingle, H. G. Biltcliffe, W. H. Pearce, E. Till; Sept. 23rd. D. McG. Lapraik; Sept. 26th. P. E. Tottle, R. R. Simmons; Sept. 28th. C. C. Carlow, H. Williams, A. K. Smith, F. R. G. Spikins, H. G. B. Lovatt, H. MacD. Brettell, G. C. R. Parker, S. H. Tirrell, D. F. Harrison; Oct. 1st.

Lieut. G. P. Wakeham relinquishes his commn. on ceasing to be employed; Oct. 5th.

Lieut. J. Wedgwood relinquishes his commn. on account of ill-health caused by wounds and is granted the hon. rank of Lieut.; Oct. 5th.

The following Lieuts. relinquish their commns. on account of ill-health contracted on active service and are granted the hon. rank of Lieut. :—W. H. Dickens, S. Evans, W. H. G. Lowther, L. Mendelssohn, E. S. Pfeiffer; Oct. 5th.

Lieut. G. H. G. Smyth resigns his commn.; Oct. 5th.

Sec. Lieut. N. V. Grimsditch resigns his commn. and is granted the hon. rank of Sec. Lieut.; Oct. 5th.

The following Sec. Lieuts. relinquish their commns., having been found permanently unfit for further instruction as Pilots or Observers :—A. W. Campbell, H. H. Cant, A. E. Holmes, H. E. Norman, C. F. Phillips, H. A. D. Phillips H. H. Ross, P. Rushworth, H. Smith, L. J. Whitehead; Oct. 5th.

The Christian name of Flight Cadet Smith Green is as now described and not "Sydney," as in *Gazette*, Sept. 20th.

The Christian name of Flight Cadet Harold Paul Lawson is as now described, and not "Harold Hall" as in *Gazette*, Aug. 6th.

The name of Flight Cadet John Howden Cook is as now described and not as in *Gazette*, July 20th.

The Christian name of James Somerville is as now described, not "George" as in *Gazette*, Sept. 20th.

The initials of H. A. Heritage are as now described, and not as in *Gazette* July 19th.

The surname of R. Ramsay is as now described and not as in *Gazette* Sept. 6th

The rank of Lieut. M. E. Dezee is as now described, and not as in *Gazette* Aug. 20th.

The initials of Lieut. (Temp. Capt.) J. G. Gillanders are as now described, and not as in *Gazette* Aug. 27th.

The notifications in *Gazette* June 7th and 21st concerning Sec. Lieut. (Hon. Maj.) and Capt. F. W. K. Davies are cancelled.

The notification in *Gazette* of July 30th concerning A. K. Mackereth is cancelled.

The notification in *Gazette* July 26th concerning the following are cancelled :—W. E. Lewis, A. J. Mantle, H. M. Schofield, F. C. Wareham, J. P. Corkery, H. B. Steckley, S. W. P. Foster-Sutton, D. J. Muil.

The notification in *Gazette* July 30th concerning Sec. Lieut. W. A. Russell is cancelled.

The notification in *Gazette* Aug. 20th concerning Philip Arthur Classen is cancelled.

The notifications in *Gazette* Aug. 23rd concerning the following officers are cancelled :—R. M. Doyle, J. F. Forster, H. A. Heritage.

The notification in *Gazette*, Sept. 3rd, concerning Joseph Bolton is cancelled.

The notifications in *Gazette*, Sept. 6th, concerning the following officers are cancelled :—T. A. Greig, D. J. MacGowan.

The notification in *Gazette*, Sept. 10th, concerning H. A. Edridge-Green is cancelled.

The notification in *Gazette*, Sept. 24th, concerning W. R. Barnett is cancelled.

The notification in *Gazette*, Oct. 1st, concerning Sec. Lieut. A. R. Hungerford is cancelled.

Administrative Branch.

Lieuts. to be Temp. Capts. while employed as Capts. :—A. S. Thompson, from (A.); April 4th. H. B. Hamilton; Sept. 14th. H. Gwynne-Smith, R. P. Lamb; Sept. 19th. G. F. Golding; Sept. 30th. G. F. Ansell, P. W. Malthouse; Oct. 1st.

Sec. Lieuts. to be Temp. Capts. while employed as Capts. :—(Hon. Capt.) J. Graham; May 6th. W. F. Dean; Aug. 28th. H. Rogers; Sept. 28th.

Capt. D. P. Rowland is reclassified (Ad.) from (O.) while employed as Lieut.; Aug. 23rd.

Lieuts. (A.) to be Lieuts. :—S. I. Chapman, F. R. Hunt; Aug. 24th.

The following are granted temp. commns. as Lieuts. :—J. B. Love (Lieut. Manch. R.); Sept. 20th. G. Southern (Lieut., Gord. Highrs.); Sept. 24th. E. W. P. Newman (Capt., Sco. Rif.) and to be Hon. Capt.; Sept. 25th.

Lieut. H. M. Tayler to be Lieut. from (O.); July 26th. (Substituted for notification in *Gazette* Aug. 6th.)

Sec. Lieuts. to be Temp. Lieuts. while employed as Lieuts. :—L. S. Pape; July 1st. K. M. Grahame; July 26th. F. H. Kemp, from (T.); Aug. 28th. N. G. Boggon; Sept. 16th. W. W. Shuker; Sept. 17th. J. C. F. Williams; Sept, 30th.

The following are granted temp. commns. as Sec. Lieuts. :—N. G. Boggon (Temp. Sec. Lieut., attd. North'd Fus.); June 29th. C. G. Sharman; Sept. 12th. W. Blairman; Sept. 15th. E. H. Hebden-Phillips; Sept. 21st. E. J. Broadbent; Sept. 23rd. C. M. Byham, N. McL. Kennedy (Hon. Capt., Ret.), and to be Hon. Capt.; Sept. 28th. H. L. A. Griffith; Sept. 30th. C. O. Trew W. J. Wilkinson; Oct. 1st.

Sec. Lieut. (Hon. Lieut.) F. J. Tussaud relinquishes his commn. on account of ill-health contracted on active service, and is granted the hon. rank of Lieut.; Oct. 5th.

The following Sec. Lieuts. relinquish their commns. on account of ill-health contracted on active service, and are granted the hon. rank of Sec. Lieut.; J. G Hall. A. N. Marples; Oct. 5th.

The surname of Lieut. L. B. Goodyer is as now described, and not as in *Gazette* July 23rd.

The notification in *Gazette*, Aug. 20th, concerning Harry Lees Smith is cancelled.

The notification in *Gazette*, Sept. 24th, concerning Christopher Wallace is cancelled.

The notification in *Gazette*, June 7th, concerning Sec. Lieut. (Hon. Lieut.) H. M. Woodhouse is cancelled.

The notification in *Gazette*, Sep. 24th, concerning Lieut. D. H. Houston is cancelled.

Technical Branch.

F. C. Jenkins (Capt., Lond. R.) is granted a temp. commn. as Capt.; April 1st.

Lieuts. to be Temp. Capts. while employed as Capts.:—F. W. Wright; May 20th. O. M. D. Bell; Sept. 6th. P. S. Laughton; Sept. 17th. H. C. Bobbett, J. Regan; Sept. 28th. E. N. L. White; Oct. 1st.

Sec. Lieut. J. W. White to be Temp. Capt. while employed as Capt.; Sept. 28th.

Capt. E. E. Adams to be Capt. from (Ad.); Sept. 10th.

Capt. A. Clayton to be Capt., from (S.O.); Sept. 23rd.

Sec. Lieuts. to be Temp. Lieuts. while employed as Lieuts.:—G. C. Moore; June 21st. (Hon. Lieut.) J. L. Dearing; Sept. 2nd. (Hon. Lieut.) H. Davis; Sept. 19th. C. H. N. Nunn; Sept. 26th. R. A. Munday; Sept. 30th.

Sec. Lieut. (on prob.) H. P. Griffiths is confirmed in his rank as Sec. Lieut., and to be Temp. Lieut. while employed as Lieut.; Sept. 17th.

Lieut. M. A. J. Orde to be Lieut., from (A.); Sept. 12th.

Lieut. J. Anstey to be Lieut., from (O.); Sept. 21st.

H. H. Bond (Lieut., Labour Corps) is granted a temp. commn. as Lieut.; July 22nd.

H. L. Bown is granted a temp. commn. as Sec. Lieut.; Oct. 1st.

Sec. Lieut. E. R. W. Lincoln to be Sec. Lieut., from (Ad.); Sept. 28th.

Lieut. (Temp. Capt.) F. B. Bayly (Lieut., A. Cyc. Corps) relinquishes his commn. on account of ill-health; July 27th.

Sec. Lieut. (Hon. Lieut.) E. McM. Howes relinquishes his commn. on account of ill-health caused by wounds, and is granted the hon. rank of Lieut.; Oct. 5th.

Sec. Lieut. D. P. Glazer relinquishes his commn. on account of ill-health contracted on active service, and is granted the hon. rank of Sec. Lieut.; Oct. 5th.

Sec. Lieut. W. Baines resigns his commn., and is granted the hon. rank of Sec. Lieut.; Oct. 5th.

The initials of Sec. Lieut. H. L. Whitelaw are as now described, and not as in *Gazette* of Sept. 13th.

The notification in *Gazette* July 9th concerning P. S. Beaufort is cancelled.

Medical Branch.

C. D. H. Corbett (late Capt., R.A.M.C.) is granted a temp. commn. as Capt.; Sept. 12th. And to be Temp. Lieut.-Col. while specially employed; Oct. 1st.

Maj. C. H. S. Taylor to be Temp. Lieut.-Col. while specially employed; Oct. 1st.

W. J. Lytle is granted a temp. commn. as Lieut.; Oct. 3rd.

Memoranda.

Lieut.-Col. J. C. Porte, C.M.G., to be Temp. Col. while specially employed Oct. 5th.

Sec. Lieut. G. N. McHardy to take rank and precedence as if his appointment as Sec. Lieut. bore date March 13th.

Hon. Lieut. H. A. Benson relinquishes his commn. on ceasing to be employed Sept. 20th.

Royal Flying Corps (Military Wing).

London Gazette Supplement, September 30th.

Flying Officer.—Temp. Sec. Lieut. G. W. Arnold, Gen. List; March 27th.

Balloon Commander.—(Graded as a Balloon Officer).—The appointment of Temp. Lieut. H. E. Ambrose, Gen. List, notified in *Gazette* Sept. 13th, is antedated to Nov. 22nd, 1917.

London Gazette Supplement, October 1st.

Adjt.—Lieut. H. Cassels, junr., Cent. Ont. R., C.E.F., and to be Temp. Capt. (with pay and allowances as Lieuts.) while so employed; Feb. 1st.

London Gazette Supplement, October 4th.

Flying Officers.—Temp. Sec. Lieuts. (on prob.), Gen. List, and to be confirmed in their rank:—B. E. Taylor; Dec. 12th, 1917. G. F. Sanderson; March 25th. C. I. Lancefield; March 31st.

Flying Officers (Observers).—Sec. Lieut. S. L. Matthews, Ind. Army Res. of Off.; Lieut. J. W. W. Tregale, Ind. Army Res. of Off.; March 1st. Temp. Lieut. G. R. Crammond, attd. Lan. Fus., and to be transferred to R.F.C., Gen. List; March 13th, seniority Jan. 27th). Lieut. J. B. Case, Ind. Army. Res. of Off.; March 18th.

Equipment Officers, 1st Class.—Capt. J. H. Scandrett, M.C., Can. F.A.; Oct. 1st, 1917.

3rd Class.—Temp. Sec. Lieut. (on prob.) A. Milner. Gen. List, and to be confirmed in his rank; Dec. 5th, 1917. Lieut. C. Morgan, R.A. (since killed); Jan. 18th.

Equipment Officers, 2nd Class.—Sec. Lieut. P. E. Scrivener, Spec. Res., from the 3rd Class, and to be Temp. Lieut. while so employed; March 11th.

3rd Class.—Temp. Sec. Lieuts. (on prob.), Gen. List, and to be confirmed in their rank:—H. Jenks; Jan. 28th. A. Stevens; March 26th.

General List.—Lieut. J. G. Munro, S. Afr. Inf., to be Temp. Lieut.; Sept. 15th, 1917.

London Gazette Supplement, October 5th.

Flying Officer.—Temp. Sec. Lieut. (on prob.) C. H. Moss, Gen. List, and to be confirmed in his rank; March 31st.

The appointments of the following Temp. Sec. Lieuts., Gen. List, are antedated as follows:—L. M. M. Browne, to Sept. 30th, 1917; J. C. Wilson to Jan. 25th.

Flying Officer, (Observer).—The appointment of Temp. Sec. Lieut. A. Leach, Brit. W. Indies R., is antedated to Feb. 1st, seniority November 20th, 1917.

Flying Officer.—Temp. Sec. Lieut. F. J. Wolno, Gen. List; March 14th.

AIRCRAFT WORK AT THE FRONT.

OFFICIAL INFORMATION.

British.

Admiralty, September 30th.

"Royal Air Force contingents working with the Navy, in addition to co-operating in the Belgian offensive, have, during the period September 23rd-27th, kept enemy shipping under continual observation. Enemy destroyers have been bombed and attacked by machine-gun fire, and bombing raids have been carried out on Zeebrugge, Ostend, Bruges, and aerodromes in the vicinity of Ghent. Severe fighting has taken place in the air, 12 enemy machines having been destroyed and 14 driven down out of control. Ten of our machines are missing. In home waters anti-submarine and convoy patrols have been maintained, and a squadron of large seaplanes carried out a long reconnaissance in the Heligoland Bight."

General Headquarters, September 30th.

"There was much activity in the air on September 29th, though in the afternoon the weather turned to rain, and flying was much impeded. No fewer than 15 hostile balloons were shot down in flames by our airmen, and many more were compelled to descend to avoid destruction. Twenty-six German aeroplanes were brought down in air fighting, and another hostile machine was brought down by our anti-aircraft fire. Nine others were driven down out of control. Nineteen of our aeroplanes are missing. One of the machines reported as missing on Saturday has now returned. Low bombing and machine-gun fire were continually employed to harass the enemy, and many direct hits on his communications were obtained. Photographic and reconnaissance patrols covered a wide area. Machines engaged in artillery co-operations worked all day with our batteries, reporting many favourable targets and observing the effect of fire. The total weight of bombs dropped by us was 36 tons, stations and junctions on the railway systems serving the fighting zones being specially selected for attack. No flying was possible at night."

General Headquarters, October 1st.

"On September 30th the weather was most unsuitable for flying. Photography was practically impossible, but, in spite of low clouds and frequent heavy showers, observation for our artillery fire was kept up, and a number of reconnaissance flights were executed. By flying low, our contact patrols succeeded in keeping in touch with our advancing lines of infantry. Nine tons of bombs were dropped by us during the 24 hours on enemy troops, transport trains and bridges. The enemy showed no activity in the air. Two of our machines are missing. In addition to the 27 enemy machines already reported as destroyed on September 29th, another hostile machine is now known to have been brought down in air fighting on that day."

Headquarters R.A.F., Independent Force, October 1st.

"In conjunction with the operations of the First American Army, our squadrons bombed Metz-Sablon station and Frescaty aerodrome during the night of September 30th-October 1st. Bad weather obscured observation. The blast furnaces at Burbach were also attacked. One of our machines has not returned."

Headquarters R.A.F., Independent Force, October 2nd.

"The machine reported missing on the night of September 30th-October 1st has now been located. This machine bombed the railway station at Mezières. On October 1st one of our squadrons bombed the railway at Trèves. Observation was impossible owing to thick clouds. All our machines returned safely."

General Headquarters, October 2nd.

"Throughout October 1st our squadrons carried on their work in fine but cloudy weather. A large number of targets were reported to our batteries, and the effect of the fire of our guns was observed as usual. Our low flying patrols were very active, raking enemy trenches with machine-gun fire, scattering parties of German troops, and stampeding gun teams by well-directed bombing. More than 1,700 photographs were taken. Thirty tons of bombs were dropped by us by day and 16 tons by night. The railway junctions in the area behind Cambrai, at Valenciennes, Aulnoye, and Busigny were heavily attacked, and two were set on fire. There was a good deal of fighting in the air on the German side of the lines. Twenty-one enemy machines were destroyed, and eight driven down out of control. Two balloons were brought down in flames. Fifteen of our machines are missing."

General Headquarters, October 3rd.

"Flying operations on October 2nd were handicapped by clouds and rain, but many reconnaissances were carried out, and a good deal of observation for our artillery was accomplished. In the course of the day 43 tons of bombs were dropped on selected targets behind the German lines. A concentrated attack was made on the railway junction at Aulnoy (south of Valenciennes), in the course of which an ammunition train was blown up and rolling stock set on fire. Aerial photographs show that great damage has been done, and much disorganisation caused to this centre of enemy communication. Lille and Valenciennes stations, as well as many targets in the battle area, were also heavily bombed. In air fighting 15 hostile machines were destroyed and five driven down out of control. Another hostile machine was driven down and compelled to land in our lines. Nine German balloons were shot down in flames. Eight of our machines are missing. One of the machines reported as missing on October 2nd has now returned. At night the weather made flying almost impossible, but before dawn one of our squadrons succeeded in dropping a ton of bombs behind the German lines. All the machines returned safely."

War Office, October 3rd.

"*Palestine.*—The enemy aerodrome and railway establishments at Rayak were heavily bombed from the air."

Headquarters R.A.F., Independent Force, October 4th.

"On the night of the 3rd-4th inst. our machines bombed the railways at Metz-Sablon and the hostile aerodromes at Morhange and Frescaty. Generally the visibility was too bad to allow of observation, but a fire and an explosion were observed at Frescaty. All our machines returned."

General Headquarters, October 4th.

"On October 3rd squadrons continued the intense activity which they have maintained on all possible occasions on the battle front. Every form of co-operation with our troops was carried out. Targets were reported to our artillery and contact was kept with our tanks and advancing infantry. Long-distance reconnaissances and photography were accomplished. Counter-attack patrols successfully forestalled the enemy's intentions by warning our headquarters. Our advancing infantry were screened by smoke curtains caused by smoke bombs dropped from the air, and our forward machine-guns were supplied with ammunition dropped for them by our airmen. At the same time our fighting squadrons kept the air free from hostile machines and enabled this work to be carried out successfully. Twenty-seven hostile machines were destroyed in aerial combat and five others were driven down out of control. One hostile balloon was burnt. In addition concentrations of fighting machines harassed the enemy's troops and transport from a low height with bombs and machine-gun fire. Our bombing squadrons dropped 26 tons of bombs by day and 30 tons by night. Considerable damage was wrought on enemy junctions and communications. Twelve of our machines are missing."

War Office, October 4th.

"*Italian Front.*—Clouds and rain have interfered considerably with work in the air. Since my last report the Royal Air Force have destroyed three enemy machines without loss to themselves."

Headquarters R.A.F., Independent Force, October 5th.

"On the morning of the 5th inst. our machines attacked the railways at Metz-Sablon with good results. Eleven direct hits were obtained on the sidings and railway lines. All our machines returned."

Headquarters R.A.F., Independent Force, October 6th.

"In addition to the bombing reported in yesterday's *communiqué*, our machines bombed Kaiserslautern and Pirmasens with good results. Very heavy fighting took place all the way to and from the objectives. Four enemy aeroplanes were shot down out of control, and four of our machines did not return. On the

night of October 5th-6th our machines dropped 12½ tons of bombs on the railways at Mezières, Metz-Sablon, Thionville, and Courcelles, the aerodromes at Morhange and Frescaty and the Burbach works. Nine heavy bombs fell in the factory at Burbach, and a fire broke out at Courcelles. All our night-flying machines returned."

French. *Paris, September 30th.*

"During the day of September 29th the mists and overcast sky have not prevented our air service from carrying out a considerable amount of work. In the course of fights, in which they retained their ascendancy over the enemy, our crews brought down or put out of action 25 German machines, and set two captive balloons on fire. Our bombarding squadrons, despite the low visibility, successfully executed several operations by flying over their objectives at a low altitude. Twenty-six tons of bombs were dropped on enemy convoys and concentrations in the battle zone, notably on Challerange, Liry, and Mount St. Martin, and some thousands of cartridges were fired at German troops in action. For their part our observation squadrons carried out numerous spotting expeditions, and accomplished several reconnaissances far into the enemy's line."

Paris, October 2nd.

"During the day of October 1st the hazy weather hampered the work of our airmen, but the few hours of clear weather were availed of by our crews. Fourteen enemy aeroplanes were brought down or put out of action, and two balloons were set on fire. Our observers made numerous reconnaissances, and the bombers dropped during the day 27 tons of projectiles, and fired thousands of cartridges into enemy concentrations and convoys behind the battle front.

"During the night of September 30th 8 tons of projectiles, and during the night of October 1st over 27 tons were dropped on the big stations of Longuyon, Conflans, Dommary, Barencourt, Maison Bleue, Le Chatelet, Montcernet, and Laon, and the railway lines and bivouacs in the region of Laon.

"Capt. Argueess, on September 27th, brought down an enemy aeroplane and two on the following day, which brings the number of his victories to 12. Sec. Lieut. Waddington, by bringing down an enemy aeroplane on September 29th, brought the number of his victories to 10 (five balloons and five aeroplanes)."

Paris, October 4th.

"The favourable atmospheric conditions enabled the Air Service to effect on October 3rd important work. Nineteen enemy machines were brought down or were seen to fall out of control, and three balloons were set on fire. The observation Air Service has not ceased to inform the Command by means of its reconnaissances, of which several were pushed very far into the enemy's lines. Further at very many points the range was given to the artillery against enemy troops and batteries. Our bombers dropped during the daytime 50,700 kilogrammes of projectiles and fired several thousands of cartridges on enemy reserves which were massing with a view to launching a counter-attack in the region of St. Pierre-à-Arnes, Machault Semide, and Contreuve. The reprovisioning of certain advanced elements was effected as on previous days by air machines. Over 5, tons of foodstuffs and cartridges were sent to our troops by this means. During the night the bombing branch of the Air Service dropped 29 tons of projectiles and copiously sprinkled bivouacs and cantonments in the region of Lens and the valley of the Suippe and the railway stations of Longuyon and Chatelet-sur-Retourne, Vouziers, Warmeriville, Maison Bleue, Laon, and Marle."

U.S.A. *Paris, October 1st.*

"Since September 26th our airmen have shot down more than 100 hostile planes and 21 balloons."

Belgian. *Havre, October 1st.*

"In spite of the activity of the enemy's aviation, Allied aeroplanes have retained the mastery of the air. British aeroplane squadrons, in particular have bombed Lichtervelde in broad daylight, and caused a fire at the railway station. Several convoys have also been dispersed by bombs or machine guns."

Havre, October 3rd.

"Four German machines were brought down by British airmen, and one captive balloon was set on fire by Lieut. Coppens, of the Belgian Air Service, who has thus achieved his 33rd victory."

"British airmen have destroyed nine enemy machines and two captive balloons."

Italian. *Rome, September 30th.*

"Two enemy aeroplanes were brought down in air fighting. British aeroplanes on September 21st bombed the enemy's lines on the Albanian front and the hangar at Ragozzina. Italian aeroplanes bombed Durazzo on September 22nd and 27th."

Rome, October 3rd.

"British aeroplanes effectively bombarded the lines of communication along the Skri and the Skumbi, and, flying low, attacked with machine-gun fire the aviation ground of the Tirana. They brought down a hostile chasing plane in air fighting."

"At midday yesterday Italian warships and British cruisers appeared before Durazzo . . . At the same time British and Italian airmen co-operated in the work of destruction effected by the ships."

Rome, October 4th.

"Reciprocal and considerable aerial activity. Three hostile planes were brought down in air fighting."

German. *Berlin, October 2nd.*

"Yesterday we shot down 27 enemy aeroplanes and three captive balloons. Capt. von Schleich obtained his 35th aerial victory and Sergt. Mai his 30th."

Turkish. *Constantinople, September 30th.*

"Near Rayak we brought down an enemy aeroplane, the occupants of which were made prisoners."

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C.M.G. for R.A.F. Officer.

THE King has given directions for the appointment of Lieut.-Col. Robert Stewart Roy, Royal Air Force, to be an additional member of the third class or companions of the Order of St. Michael and St. George, "in recognition of distinguished services during the war."

Mentioned in Despatches.

IT was announced in a supplement to the *London Gazette* on October 7th that the names of the following have been brought to the notice of the Secretary of State for War for valuable services rendered in connection with military operations :—

Royal Air Force.

Capt. (Temp. Maj.) F. W. Stent, M.C.; Lieut. J. M. Watson; 1753 Chief Mech. (A./Chief Master Mech.) G. A. F. Gibson; 39122 Cpl. Mech. R. W. Forder; 49766 Cpl. Clk. A. Ross; 3326 Sgt. Mech. T. R. Stokes.

French Honours for Colonel Bishop, V.C.

IT was announced on October 4th, that Lieut.-Col. W. A. Bishop, V.C., D.S.O., M.C., D.F.C., has been made a Chevalier of the Legion of Honour, and been awarded the Croix de Guerre (with palm) for distinguished service in the zone of the French Armies.

American Honour for the late Capt. Ball.

ON behalf of the Aero Club of America, Mr. Calvin Hitch, the United States Consul at Nottingham, on Monday presented to Alderman Ball a bronze medal and illuminated diploma in recognition of the services of the late Capt. Albert Ball, V.C., D.S.O., M.C. Mr. Hitch predicted that American aeroplanes would soon be bombing German cities in large numbers. He added, "The only way to fight the devil is with fire. The Germans started bombing undefended towns. Let us give them a double dose of their own medicine."

Vice-Admiral Mark E. Kerr, C.B., M.V.O.

IT was announced by the Admiralty last week that Vice-Admiral Mark E. Kerr, C.B., M.V.O., was placed on retired list at his own request to facilitate promotion of younger officers, to date October 1st.

It will be remembered that Vice-Admiral Mark Kerr is now a Major-General in the Royal Air Force.

Capt. J. J. Hammond Killed in U.S.

CAPT. JOSEPH J. HAMMOND, R.A.F., who was a pioneer of flying in New Zealand, was killed recently at Indianapolis, when his aeroplane crashed to earth.

At the funeral the coffin, draped with the British and American flags, was attended by United States and British soldiers, including a firing squad of American and British aviation officers. Thousands of citizens attended the ceremony, at which the Bishop of Indianapolis officiated.

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Lieut. Garros Missing Again.

IT was announced in Paris on October 7th that Lieut. Garros had not returned from a reconnaissance.

It may be recalled that Garros was forced to land at Ingelmunster, West Flanders, in April, 1915, and was captured by the Germans. He escaped last February, and on his return to France was made an Officer of the Legion of Honour.

Aerial Mails from Australia.

CABLE messages from Sydney state that a local company has been formed with the object of arranging the preliminaries for an aerial mail service between Australia and England. At a meeting in Sydney, on October 2nd, of representative business men, it was stated that the flight would take 150 hours, and sufficient capital was guaranteed for the purpose, provided that permission was obtainable.

How America Does It.

IT is stated that in America, aeroplane inspectors have been ordered to take the first flight in every machine passed by them.

Income Tax at the R.A.E.

ANOTHER big batch of Royal Aircraft Establishment employees were summoned at Aldershot the other day for the non-payment of the income tax. Orders were made for payment with additional Court costs, and costs were granted where cases had been settled out of Court.

Bombs on Switzerland.

On the night of September 30th a "foreign" airman dropped two bombs at Bonfol, Switzerland. Nobody was injured, and the material damage is small.

A "Raid" on Copenhagen.

AN extraordinary story has it that two aeroplanes of a foreign type, probably German, passed over Copenhagen on October 2nd, at a height of about 5,000 ft. After performing a number of dangerous evolutions the machines are said to have disappeared towards the south.

Apologies to Holland.

REGRET has been expressed by the British Government for the violation of Dutch neutrality by five British seaplanes near the island of Ameland on June 30th and for the violation of Dutch territory by British aeroplanes on June 20th and July 4th.

Outrage on German-Swiss Frontier.

THE Swiss newspapers on October 7th announced that at 20 minutes to 1 that morning a German aeroplane attacked and machine-gunned a Swiss captive balloon stationed between Miecourt and Cornol. The balloon caught fire and fell some metres from the frontier. Lieut. Fuiry, who was in the balloon, was burned to death.

LEISURE HOURS.

THERE is a faded graciousness about the play "Sweet Lavender" akin to that of an old-time gown that has laid for long in a perfumed chest. Much water has flowed under the bridges since I saw Edward Terry play it to packed houses in that little theatre in the Strand. In those dear days we thought Pinero's play the quintessence of wit—that fifth essence of the Pythagoreans, beyond earth, water, fire or air; and even to-day, though the polished facets of the conversation do not dazzle us as once they did, the charm has not quite departed.

It was a happy idea of Major Gordon-Watney's to present this restful little comedy, with its gentle humours, and occasional tug at the heart, for the benefit of the "Comrades of the Great War" (Weybridge Branch). It was staged at the New Canteen Theatre, in the well-known works, and it must be said at the outset that neither the acting nor the *mis-en-scène* bore any of the stigmata too usually associated with amateur productions.

The voice of the prompter was as still and small as a German conscience, and, *mirabile dictu*, each word spoken by the performers was clearly audible. Every credit is due to Miss Suzanne Sheldon, who was responsible for the stage direction.

Perhaps you remember that the story centres round the barrister, Dick Phenyl, a gentle, loveable creature, full of whimsies, but fatally addicted to the cup that both cheers and inebriates. He has staying with him in his chambers in the Temple a youngster, Clement Hale, the adopted son of a wealthy banker, who, in spite of repeated doses of worldly wisdom unconvincingly administered by Dick—persists in falling in love with Lavender, the winsome and unsophisticated daughter of their housekeeper, Ruth Holt. The managing sister of Clement's foster-father, Mrs. Gilfillian, has set her heart on marrying the boy to her daughter, Minnie. Complications, dire and painful, ensue.

The wretched Dick struggles against the promptings of a soft heart, but is brought to see that it may be better for the boy and girl that they part, the better to avoid a disillusionment. But the strain of doing what seems a mean thing is too much for him, *canis reversus ad suam vomitum*, the bedraggled gentleman seeks refuge in the familiar bottle, and earns the righteous scorn of everyone. Everybody is intensely miserable, and virtue seems to confer no sense of well-doing. In this act Maj. Gordon-Watney excelled. His delineation of Phenyl was marked by a nice restraint, and among the rubble of a crumbling character he yet made clear the thread of fine gold. He succeeded in grafting something of originality on to the mannerisms that tradition has associated with the part, and he never missed conviction.

As Ruth Rolt, Miss Suzanne Sheldon played with a motherly pathos that was nigh to starting the reluctant tears of her audience, and the Hon. Mrs. Rowland Winn gave us a sweetly pensive, though somewhat effaced, Lavender.

Mr. F. Lidington, as Clement Hale, the young lover, did very well with what was a decidedly exacting part. At times he appeared to be painfully conscious of the excessive nobility of the sentiments allotted to him, but he atoned for this by a genial warmth in love-making.

The managing mother of Mrs. H. Dormer was instinct with the spirit of comedy, and the lady in question neatly evaded the very natural tendency to over-act this highly accentuated part.

As the daughter Minnie, predestined bride of the hero, Mrs. Gordon Watney distilled a sweet reasonableness, more especially in that trying scene where she steps aside in favour of her more lowly rival. This was womanliness in its essence, and admirably done, so much so that one is tempted to assert that Mrs. Gordon Watney has missed her rightful avocation.

Mr. Cyril Chamberlaine, as the painfully persistent American suitor, Horace Bream (who wins the beguiling Minnie in the end), played with a truly Transatlantic *verve*. One was glad to see such concentration so richly rewarded. The part of the banker, Mr. Geoffrey Wedderburn, was mellifluously done by the Hon. H. Cavendish Butler, his paternal suavity neatly rounded off the ending. He was manifestly designed by nature to bestow benedictions.

Dr. Delaney, a genial god from the machine, found a happy interpreter in Mr. J. W. Dews; and Mr. E. Hucks effectively doubled the minor parts of the solicitor who brings good news, and an amorous hairdresser.

In order that a happy ending may be attained, the long arm of coincidence is given a wrench that nearly twists it from its socket, and the neglected and exiled Lavender turns out to be the natural daughter of Mr. Geoffrey Wedderburn. Thus his objections to the unsuitability of the match are deftly resolved, and the curtain falls on an aggregation of mutually adoring couples, and a presumably reformed Dick.

That the audience was highly appreciative is evinced by the statement volunteered by a local scribe, who told me that the performance "Laid over any ploughing match *he'd* ever seen!" As he added that "a goodly sum" had been obtained for the Comrades, one may conclude that the aims of the kindly company of temporary Thespians has been attained.

R. H. B.

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IF the weather was dull the proceedings certainly were not at the sports meeting organised by the Avro Social Club at Hamble. Mr. A. V. Roe entered not only wholeheartedly nto the spirit of the affair, but also in several of the events. There were some 27 items on the programme, and more than half of them were open. Some good running was seen in both ladies' and gentlemen's events. The Bishops Waltham band was in attendance, and at the close of the competitions Mrs. A. V. Roe distributed the prizes. Afterwards a very enjoyable social was held in the Avro Club.

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THE second annual swimming gala of the employees and staff of the Grahame-White Co. was held at the Hampstead Baths on Saturday, September 28th. There was a large audience, including the Hon. Mrs. Henley, Lord Muir Mackenzie, and Mr. and Mrs. Grahame-White. Miss M. Short won the 60 yards Club Championship for the prize presented by Mrs. Grahame-White. Mr. H. Stewart took the Challenge Cup offered by Mr. Grahame-White in the 440 yards scratch race. In the Life Saving Competition for the Challenge Trophy presented by Mrs. Winston Churchill the winner was Mr. F. Topham, and in the open fancy diving competition, for a challenge cup given by the Hon Mrs. Henley, Mr. A. Crutchley won.

The prizes will be presented to the successful competitors by Mrs. Grahame-White at a concert which will be held in the large mess-room of the company at 8.15 p.m. on October 18th.

SIDE-WINDS.

ONE of the things which impressed the visitors at the B.L.I.C. workt to which reference was made in our last issue was the thorough way in which the testing arrangements were organised. As far as possible the material is consistently tested at each important stage and each sub-assembly is tested before being incorporated in larger assemblies while the main components such as armature, condenser and the high tension distributor, from slip ring to distributor have to pass exhaustive tests. Thus is explained the reliability of the finished product. There is however another and important advantage of the system in the economy which follows from the throwing out of faulty material at the earliest possible stage in its manufacture. The testing of armatures as it is carried out by the B.L.I.C. was of particular interest, as it is largely responsible for the reputation for length of life and freedom from breakdown which their magnetos have earned. The insulating of a magneto armature is a much more arduous task than many electrical engineers have any conception of. We sometimes wonder what transformer makers would say and do were they compelled to make 10,000 volt transformers to fit into a restricted space without the assistance in insulating them which is obtained by oil immersion. It was wonderful to watch the extreme care with which the layers of thin wire were placed in position and then after being stoved, impregnated and dried, going through its first rigorous testing. It was apparent then that the discovering of weak spots had been developed into a science, and that a magneto which successfully run the gauntlet was something to depend upon.

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FROM Mr. Ernest Ingram Hill, of 2 The Broadway, Wimbledon, S.W. 19, come some examples of advertisements which he has produced. They have a certain distinction of their own which is not surprising when it is remembered that Mr. Hill has made a speciality of engineer's advertising. He is also free to assist with the preparation of catalogues, &c., and will be pleased to send a copy of the leaflet to any firm interested.

COMPANY MATTERS.

Aircraft Manufacturing Co., Ltd.

An extraordinary general meeting of the Aircraft Manufacturing Co., Ltd., was held on October 8th at the Central Hall, Westminster, for the purpose of submitting to the shareholders a resolution enlarging the directors' borrowing powers. Mr. Hugh Burroughes, a director of the company, presided in the absence of Mr. George Holt Thomas, the chairman of the company, who was prevented by an attack of influenza from being present.

Mr. Burroughes, in moving the resolution, after expressing the regret of Mr. Holt Thomas at his inability to be present, said :—"I trust that you will agree that the accounts are highly satisfactory, which means the immediate participation of the preference shares in an increased dividend over and above the fixed 7 per cent., and makes the total dividend for the first year of the existence of these shares 11·4 per cent. I believe, however, that you will take even a greater interest in what the company has done to assist in winning the war. As regards profits, this company, as, indeed, any other aircraft company, notwithstanding the fact that we are pioneers, suffers by comparison with many firms who have only entered on aircraft production since the war, as we have a small pre-war standard year owing to the apathetic view taken as to the value of aircraft in pre-war days, whilst those firms who have come in since the war have a good pre-war standard on some other product, and we are, of course, all subject to 80 per cent. excess profit duty. It is somewhat difficult for us as directors of the company to praise its work, but as proprietors it is your due that you should know something of what we have done against the Huns.

"I think I may safely tell you that during the war, as in pre-war days, it has thoroughly maintained its position as one of the largest producers in this country, but we have done much more than that, inasmuch as we have provided the designs on which a large proportion of the aircraft production of this country is founded, and I think it is not going too far to say that if it had not been for our designs it would have been very difficult indeed to carry the war into the enemy's country as we are doing to-day. Also we pride ourselves on the fact that we have supplied the designs for a very large proportion indeed of aircraft production in the United States. Our latest types of machines have remarkable qualities in many ways. We can therefore claim to have done our bit in the war both as regards production of machines and also as regards production of designs.

"Lord Cowdray, when President of the Air Board, was good enough to describe the existence of this company at the outbreak of war as a national asset. I think you are aware that our machines are known as the D.H. machines, and are so named after Capt. Geoffrey de Havilland, who has been our chief designer since the beginning of 1914. In order that the name of our company and the name of the machines may be more closely identified, we are considering, with Capt. de Havilland's approval, a new form of nomenclature, which will be announced shortly.

"Now, two questions have been addressed to the board, which I may as well answer whilst I am dealing with the question of design. I am asked what royalties we are to be paid by the Government for the use of our designs in so many factories in Great Britain, and also for the use of them in large quantities in the United States. The answer is, frankly, I cannot say, but I have no reason to doubt as yet that we shall be adequately compensated, and I cannot imagine any Government would take designs, not only for this country, but for the United States—even though they may have the power under the Defence of the Realm Act—without adequate compensation.

"Another question, which is of even more vital interest to you, which I wish I could answer correctly, is, what is likely to be the position of the Aircraft Manufacturing Co. after the war? It is, of course, impossible to forecast this correctly. Naturally, aircraft will not be in the same demand as they are to-day during the war, but it is a curious fact that the pioneer firms—that is, those who were in existence before the war, building aircraft whether they were wanted or not, building regardless of the fact that no recognition could be obtained for the utility of aircraft in war—have, during the war, been the designing firms—that is, the firms in a position to produce constantly improving designs to beat the German machines, and providing all the blue prints and technical information on which the enormous production of aircraft in this country has been obtained.

"Now these firms, of which perhaps the Aircraft Co. is the largest, can be counted almost on the fingers of one hand, and if the Government after the war (always provided, of course, that we do our duty, as we did before and have done during the war) place their orders for the naturally diminished number of aeroplanes required with those aircraft-designing firms, as opposed to placing them with the hundreds of aircraft builders but not designers, who have only come in since 1914, then I believe that these firms would be adequately maintained. I have not yet encountered any Government official who did not think this would be the case. It is perhaps not for me to express an opinion, but at the same time I feel that it is necessary to maintain these firms in active existence, even in the interest of the nation. I have mentioned that our output is large—it is more than that, and for the last financial year it amounted to nearly £5,000,000 sterling. You will all realise that we cannot carry out contracts of these dimensions without adequate funds. It involves the carrying of very large stocks of material, the providing for very large wage bills, and has, up to the present, involved very heavy capital expenditure. We could, of course, raise permanent capital, but I do not think—and I am sure you will agree with me—that it would be in our interests to saddle the company with huge capital liabilities on which we should have to pay interest after the war.

"The resolution I have to propose gives the directors increased borrowing powers, in order that we might finance our very large contracts by temporary means. I may mention in this respect that we have arranged, with the sanction of the Treasury already obtained, to create an issue of £250,000 in short-term notes redeemable at any time at our option, but in any case after three years, by annual drawings. The whole of this issue has been purchased by the British, Foreign, and Colonial Corporation, Ltd., who have placed our previous issues in a most satisfactory manner."

Mr. A. F. Thomas seconded the resolution, which was put to the meeting, and duly carried.

Sunbeam Motor Car Co., Ltd.

The Directors in their report for the year ending August 31st, 1916, state that the delay has been due to the time absorbed in negotiations with the Ministry of Munitions and Inland Revenue Authorities in settling the amount of Munitions Levy and Excess Profits Duty payable and in assessing the probable post-war values of the extensive capital expenditure incurred to meet national requirements for war purposes.

The profit for the year, after paying all expenses of management and allowing for depreciation and income tax and after deducting excess profits duty and munitions levy for two years to date (but before providing for directors' remuneration) amounts to £50,025 5*s.* 1*d.* After adding £71,167 12*s.* 5*d.* the balance from last year, and deducting £900, the half-yearly dividend on the preference shares and £12,000, the interim dividend at 5 per cent. (free of tax) on the ordinary shares paid in April, 1916, there is a balance of £108,292 17*s.* 6*d.*, out of which the following appropriations have been made in accordance with the resolution passed at the meeting held on November 28th, 1916 :—Balance of dividend on the preference shares, £900 ; final dividend of 10 per cent. free of income tax on the ordinary shares, £24,000 ; bonus of 3*s.* per share, free of income tax, on the ordinary shares, £36,000 ; placed to bonus fund, &c., £5,000 ; directors' remuneration, free of income tax, £5,000 ; balance carried forward to next account, £37,392 17*s.* 6*d.*

Vickers, Ltd.

Vickers, Ltd., announce that Treasury sanction has now been obtained for the new issue of 1,850,000 new ordinary shares.

FLIGHT

and The Aircraft Engineer,

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